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# MINERALS AND METALS FOR WAR PURPOSES

## HEARINGS

BEFORE THE

## COMMITTEE ON MINES AND MINING
## UNITED STATES SENATE

SIXTY-FIFTH CONGRESS

SECOND SESSION

ON THE BILL

## H. R. 11259

TO PROVIDE FURTHER FOR THE NATIONAL SECURITY AND DEFENSE BY ENCOURAGING THE PRODUCTION, CONSERVING THE SUPPLY, AND CONTROLLING THE DISTRIBUTION OF THOSE ORES, METALS, AND MINERALS WHICH HAVE FORMERLY BEEN LARGELY IMPORTED, OR OF WHICH THERE IS OR MAY BE AN INADEQUATE SUPPLY

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Printed for the use of the Committee on Mines and Mining

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1918

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# MINERALS AND METALS FOR WAR PURPOSES.

**THURSDAY, MAY 2, 1918.**

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met at 10.30 o'clock a. m. in room 450, Senate Office Building, Senator Charles B. Henderson presiding.

Present: Senators Henderson (chairman), Ashurst, Shafroth, Sterling, Walsh, Phelan, and Sutherland.

Present also: Mr. George Otis Smith, Director Geological Survey, and Dr. Van H. Manning, Director Bureau of Mines.

The committee proceeded to consider the bill H. R. 11259, as follows:

[H. R. 11259, 65th Congress, 2d session.]

AN ACT To provide further for the national security and defense by encouraging the production, conserving the supply, and controlling the distribution of those ores, metals, and minerals which have formerly been largely imported, or of which there is or may be an inadequate supply.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That by reason of the existence of a state of war, it is essential to the national security and defense, for the successful prosecution of the war, for the support and maintenance of the Army and Navy, to assure an adequate supply, equitable distribution, and to facilitate the production and movement of necessaries, which necessaries are defined in this act to include only the following named mineral substances and ores, minerals, intermediate metallurgical products, metals, alloys, and chemical compounds thereof, to wit: Antimony, arsenic, ball clay, bismuth, bromine, cerium, chalk, chromium, cobalt, corundum, emery, fluorspar, ferro-silicon, fullers earth, graphite, grinding pebbles, iridium, kaolin, magnesite, manganese, mercury, mica, molybdenum, osmium, sea salt, platinum, palladium, paper clay, potassium, pyrites, radium, sulphur, thorium, tin, titanium, tungsten, uranium, vanadium, zirconium, and of other rare or unusual elements the supply of which may, in the judgment of the President, be inadequate for war and industrial needs; to prevent, locally or generally, scarcity, monopolization, hoarding, injurious speculation, manipulations, and private controls, affecting such supply, distribution, and movement; and to establish and maintain governmental control of such ecessaries during the war and thereafter for such period of time as is hereinafter provided. For such purposes the instrumentalities, means, methods, powers, authorities, duties obligations, and prohibitions hereinafter set forth are credited, established, conferred, and prescribed.

SEC. 2. That the President is authorized through the Secretary of the Interior to make such regulations and to issue such orders as are essential effectively to carry out the provisions of this act. That in carrying out the purposes of this act the Secretary of the Interior, with the approval of the President, is authorized to enter into any voluntary arrangements or agreements; to use any agency or agencies; to accept the services of any persons without compensation; to cooperate with any agency or person; and to coordinate their activities so as to avoid any preventable loss or duplication of effort or funds.

SEC. 3. That no person acting either as a voluntary or paid agent or employee of the United States in any capacity, including an advisory capacity,

shall solicit, induce, or attempt to induce, any person or officer authorized to execute or to direct the execution of contracts on behalf of the United States, to make any contract or give any order for the furnishing to the United States of any necessaries or other property covered by the provisions of this act, if such agent or employee has any pecuniary interest in such contract or order, or if he or any firm of which he is a member, or corporation, joint-stock company, or association of which he is an officer or stockholder, or in the pecuniary profits of which he is directly or indirectly interested, shall be a party thereto. Nor shall any such agent or employee make, or permit any committee or other body of which he is a member to make, or participate in making, any recommendation concerning such contract or order to any council, board, or commission of the United States, or to any member or subordinate thereof, without making to the best of his knowledge and belief a full and complete disclosure in writing to such council, board, commission, or subordinate of any and every pecuniary interest which he may have in such contract or order and of his interest in any firm, corporation, company, or association being a party thereto. Nor shall he participate in the awarding of such contract or giving such order. Any willful violation of any of the provisions of this section shall be punishable by a fine of not more than $10,000, or by imprisonment of not more than five years, or both: *Provided*, That the provisions of this section shall not change, alter, or repeal section forty-one of chapter three hundred and twenty-one, Thirty-fifth Statutes at Large.

Any agent or employee of the United States who, contrary to the provisions of this section, shall receive any profit or profits from any contract for necessaries made under the provisions of this act, or any firm of which such agent or employee is a member or any corporation, joint-stock company or association of which such agent or employee is an officer or stockholder or in the pecuniary profits of which he is directly or indirectly interested, which, contrary to the provision of this section, shall receive any profits from any contract for necessaries or for other property taken for the purpose of obtaining necessaries under the provisions of this act, shall forfeit to the United States all such profits and the same may be recovered by the United States in any appropriate action at law or equity in any proper district court any time within five years after fact of such interest shall be discovered.

SEC. 4. That it is hereby made unlawful for any person willfully to commit waste or willfully to permit preventable deterioration of any necessaries in or in connection with their production, manufacture, or distribution; to hoard, as defined in section six of this act, any necessaries; to monopolize or attempt to monopolize, either locally or generally, any necessaries; to engage in any discriminatory and unfair or any deceptive or wasteful practice or device, or to make any unjust or unreasonable rate or charge, in handling or dealing in or with any necessaries; to limit the facilities for transporting, producing, manufacturing, supplying, storing, or dealing in any necessaries; to restrict the supply of any necessaries; to restrict distribution of any necessaries; to prevent, limit, or lessen the manufacture or production of any necessaries in order to enhance the price thereof; to exact excessive prices for any necessaries; or to conspire, combine, agree, or arrange with any other person to do or perform any of the acts or things prohibited by this section, or to aid or abet the doing of any act made unlawful by this section.

SEC. 5. That from time to time, whenever the Secretary of the Interior, with the approval of the President, shall find it essential to license the manufacture, storage, mining, distribution, or use of any necessaries, in order to carry into effect any of the purposes of this act, and shall publicly so announce, no person shall, after the date fixed in the announcement, engage in or carry on any such business specified in the announcement of mining, manufacture, storage, distribution, or use of any necessaries as set forth in such announcement, unless he shall comply with license regulations issued pursuant to this section. The Secretary of the Interior is authorized to issue and revoke such licenses and to prescribe regulations for the issuance and revocation of such licenses and requirements for systems of accounts and auditing of accounts to be kept by licensees, submission of reports by them with or without oath or affirmation, and the entry and inspection by the duly authorized agents of the Secretary of the Interior of the places of business, correspondence, papers, books, and records of licensees. Whenever the Secretary of the Interior shall find that any royalty, charge, price, commission, profit, or practice of any licensee is unjust, or unreasonable, or discriminatory and unfair, or wasteful, or causing waste, and shall order such licensee within a reasonable time fixed in the order to discontinue

the same, unless such order, which shall recite the facts found, is revoked or suspended, such licensee shall, within the time prescribed in the order, discontinue such unjust, unreasonable, wasteful, discriminatory, and unfair royalty, charge, price, commission, profit, or practice. The Secretary of the Interior may, in lieu of any such unjust, unreasonable, wasteful, discriminatory, and unfair royalty, charge, price, commission, profit, or practice, find what is a just, reasonable, nondiscriminatory, and fair royalty, charge, price, commission, profit, or practice, and in any proceeding brought in any court such order and findings of the Secretary of the Interior shall be prima facie evidence of the facts stated therein. Any person who willfully fails or refuses to discontinue any unjust, unreasonable, wasteful, discriminatory, and unfair royalty, charge, price, commission, profit, or practice, in accordance with the requirement of an order issued under this section, or any regulation prescribed under this section, shall, upon conviction thereof, be punished by a fine not exceeding $5,000, or by imprisonment for not more than two years, or both, and in addition shall pay into the United States Treasury the full amount of any excessive royalty, charge, price, commission, or profit which he may have received in violation of any such order or regulation.

SEC. 6. That necessaries shall be deemed to be hoarded within the meaning of this act when either (a) held, contracted for, or arranged for by any producer, manufacturer, wholesaler, retailer, dealer, or other person in a quantity in excess of the reasonable requirements of his business for use or sale by him for a reasonable time, or reasonably required to furnish necessaries produced in surplus quantities seasonally throughout the period of scant or no production; or (b) withheld, whether by possession or under any contract or arrangement, from the market by any person for the purpose of unreasonably increasing or diminishing the price.

SEC. 7. That whenever any necessaries shall be hoarded as defined in section six they shall be liable to be proceeded against in any district court of the United States within the district where the same are found and seized by a process of libel for condemnation; and if such necessaries shall be adjudged to be hoarded they shall be disposed of by sale in such manner as to provide the most equitable distribution thereof as the court may direct, and the proceeds thereof, less the legal costs and charges, shall be paid to the party entitled thereto. The proceedings of such libel cases shall conform as near as may be to the proceedings in admiralty, except that either party may demand trial by jury of any issue of fact joined in any such case, and all such proceedings shall be at the suit of and in the name of the United States. It shall be the duty of the United States attorney for the proper district to institute and prosecute any such action upon presentation to him of satisfactory evidence to sustain the same.

SEC. 8. That any person who willfully destroys any necessaries for the purpose of enhancing the price or restricting the supply thereof shall, upon conviction thereof, be fined not exceeding $5,000 or imprisoned for not more than two years, or both.

SEC. 9. That any person who, in order to enhance the price of necessaries or for the purpose of impeding the Government in carrying on the war, conspires, combines, agrees, or arranges with any other person, or who aids or abets any other person (a) to limit the facilities for transporting, producing, manufacturing, supplying, storing, or dealing in any necessaries; (b) to restrict the supply of any necessaries; (c) to restrict the distribution of any necessaries; (d) to prevent, limit, or lessen the manufacture or production of any necessaries shall, upon conviction, be fined not exceeding $10,000 or be imprisoned for not more than two years, or both.

SEC. 10. That the President is authorized from time to time, whenever in his judgment it may be required for the successful prosecution of the war, to requisition necessaries, and to requisition, or otherwise provide, storage facilities for such necessaries; and he shall ascertain and pay a just compensation therefor. Compensation provided for under this section shall be paid from the appropriation made by section seventeen of this act. If the compensation so determined be not satisfactory to the person entitled to receive the same, such person shall be paid seventy-five per centum of the amount so determined by the President, and shall be entitled to sue the United States to recover such further sum as, added to said seventy-five per centum, will make up such amount as will be just compensation for such necessaries or storage space, and jurisdiction is hereby conferred on the United States district courts to hear and determine all such controversies.

SEC. 11. That the Secretary of the Interior, with the approval of the President, is authorized from time to time to enter into contracts for necessaries for periods of not exceeding two years, to purchase, to store, to provide storage facilities for, and to sell necessaries at reasonable prices to be fixed by the Secretary of the Interior, with the approval of the President: *Provided*, That if any minimum price shall have been theretofore fixed pursuant to the provisions of section thirteen of this act, then the price paid for any such articles so purchased shall not be less than such minimum price: *Provided further*, That nothing in this act shall be construed to authorize entering into contracts under this act after the termination of the war except for the purpose of selling, storing, or otherwise disposing of property on hand, or such as may be necessary to protect the Government on its guarantees under section thirteen. Any moneys received by the United States from or in connection with the disposal by the United States of necessaries under this section may, in the discretion of the President, be used as a revolving fund for further carrying out the purposes of this section. Any balance of such moneys not used as part of such revolving fund shall be covered into the Treasury as miscellaneous receipts.

SEC. 12. That whenever the President shall find it essential to the successful prosecution of the war to secure an adequate supply of necessaries he is authorized, through the Secretary of the Interior, to requisition and take over, for use or operation by the Government, any undeveloped, insufficiently developed or operated, or idle mineral land or deposit, mine, smelter, or plant and to develop, operate, or cause the same to be developed or operated in such manner and through such agency as he may direct. That hereafter during the existing state of war, the Secretary of Agriculture is authorized, under regulations to be prescribed by him, to permit the Interior Department, or any other department, board, or commission of the Government to take from the national forests such minerals as may be needed in the prosecution of the war. Whenever the Secretary of the Interior, with the approval of the President, shall determine that the further use or operation by the Government of any such mineral land, deposit, mine, smelter, or plant, or part thereof, is not essential for the successful prosecution of the war the same shall be restored to the person entitled to the possession thereof. The United States shall make just compensation, to be determined by the Secretary of the Interior, approved by the President, for the taking over, use, occupation, and operation by the Government of any such mineral land or deposit, mine, smelter, or plant, or part thereof. If the compensation so determined be unsatisfactory to the person entitled to receive the same, such person shall be paid seventy-five per centum of the amount so determined and shall be entitled to sue the United States to recover such further sum as added to said seventy-five per centum will make up such amount as will be just compensation, in the manner provided for by section twenty-four, paragraph twenty, and section one hundred and forty-five of the Judicial Code. Compensation provided for in this section shall be paid from the appropriation made by section seventeen of this act. The Secretary of the Interior, with the approval of the President, is authorized to prescribe such regulations as he may deem essential for carrying out the purposes of this section, including the operation of any such mineral land or deposit, mine, smelter, or plant, or part thereof, the purchase, sale, or other disposition of articles used, manufactured, produced, prepared, or mined therein, and the employment, control, and compensation of employees. Any moneys received by the United States from or in connection with the use or operation of any such mineral land or deposit, mine, smelter, or plant, or part thereof, may, in the discretion of the President, be used as a revolving fund for the purpose of the continued use or operation of any such mineral land or deposit, mine, smelter, plant, or part thereof, and the accounts of each such mineral land or deposit, mine, smelter, plant, or part thereof, shall be kept separate and distinct. Any balance of such moneys not used as part of such revolving fund shall be paid into the Treasury as miscellaneous receipts.

SEC. 13. That whenever the Secretary of the Interior, with the approval of the President, shall find that an emergency exists requiring stimulation of the production within the United States, its insular possessions, Territories, and District of Columbia of any one or more necessaries, and that it is essential that the producers of any one or more of such necessaries shall have the benefits of the guaranty provided for in this section, he is authorized, with the approval of the President, from time to time, seasonably and as far in advance as practicable, to determine and fix and give public notice of what, under specified conditions, are reasonable guaranteed prices, in order to assure such pro-

ducers a reasonable profit. The Secretary of the Interior shall, from time to time, establish and promulgate such regulations, with the approval of the President, as he shall deem wise in connection with such guaranteed prices, and in particular governing conditions of delivery and payment and differences in price for any of the several specified necessaries. Thereupon the Government of the United States hereby guarantees every producer of these specified necessaries that, upon compliance by him with the regulations prescribed, he shall receive for any necessaries produced in reliance upon this guaranty within the period, not exceeding two years, prescribed in the notice, a price not less than the guaranteed price therefor as fixed pursuant to this section. Such regulations shall prescribe the terms and conditions upon which any producer shall be entitled to the benefits of such guaranty. When the President finds that the importation into the United States of any of these necessaries produced outside of the United Staes maerially enhances or is likely materially to enhance the liabilities of the United States under guaranties of prices therefor made pursuant to this section and ascertains what rate of duty added to the then existing rate of duty, if any, on each of the necessaries and to the value of each of the necessaries at the time of importation would be sufficient to bring the price thereof at which imported up to the price fixed therefor pursuant to the foregoing provisions of this section, he shall proclaim such facts, and thereafter there shall be levied, collected, and paid upon each of these necessaries, when imported, in addition to the then existing rate of duty, the rate of duty so ascertained; but in no case shall any such rate of duty be fixed at an amount which will effect a reduction of the rate of duty upon any of these necessaries under any then existing tariff law of the United States. For the purpose of making any guaranteed price effective under this section, or whenever he deems it essential, in order to protect the Government of the United States against material enhancement of its liabilities arising out of any guaranty under this section, the Secretary of the Interior, with the approval of the President, is authorized also, in his discretion, to purchase any of these necessaries for which a guaranteed price shall be fixed under this section, and to hold, transport, or store, or to sell, dispose of, and deliver the same to any citizen of the United States or to any Government engaged in war with any country with which the Government of the United States is or may be at war, or to use the same as supplies for any department or agency of the Government of the United States. Whenever and wherever it is in his judgment necessary for the effective prosecution of the war the President, through the Secretary of the Interior, is authorized and empowered to establish rules for the regulation of and to regulate the method of production, sale, shipment, distribution, apportionment, or storage thereof among dealers and consumers, domestic or foreign. And moneys received by the United States from or in connection with the sale or disposal of necessaries under this section may, in the discretion of the President, be used as a revolving fund for further carrying out the purposes of this section. Any balance of such moneys not used as part of such revolving fund shall be covered into the Treasury as miscellaneous receipts.

SEC. 14. That whenever the President shall find that limitation, regulation, or prohibition of the use of any of these necessaries is essential in order to assure an adequate and continuous supply of necessaries, or that the national security and defense will be conserved thereby, he is authorized, from time to time, to prescribe and give public notice of the extent of the limitation, regulation, prohibition, or reduction so necessitated. Whenever such notice shall have been given and shall remain unrevoked all persons shall, after a reasonable time prescribed in such notice, conform to the order providing such limitation, regulation, prohibition, or reduction. Any person who willfully violates the provisions of this section, or who shall violate any rule or regulation made under this section, shall be punished by a fine not exceeding $5,000, or by imprisonment for not more than two years, or both.

SEC. 15. That every person who willfully assaults, resists, impedes, or interferes with any officer, employee, or agent of the United States in the execution of any duty authorized to be performed by or pursuant to this act shall upon conviction thereof be fined not exceeding $1,000, or be imprisoned for not more than one year, or both.

SEC. 16. That the sum of $500,000 is hereby authorized to be appropriated out of any moneys in the Treasury not otherwise appropriated, to be available until June thirtieth, nineteen hundred and nineteen, for the payment of all expenses of carrying out the provisions of this act, including personal services,

traveling and subsistence expenses, the payment for rent, the purchase of equipment, supplies, postage, printing, publications, and such other articles, both in the District of Columbia and elsewhere, as the Secretary of the Interior may deem essential.

The maximum salary to be paid under the provisions of this act shall not exceed the rate of $4,500 per annum for any scientific, technological, or administrative service, and shall not exceed the rate of $1,800 per annum for any clerical or other subordinate service.

SEC. 17. That for the purposes of this act the sum of $10,000,000 is hereby authorized to be appropriated, out of any moneys in the Treasury not otherwise appropriated, to be available as a revolving fund during the time this act is in effect: *Provided*, That no part of this appropriation shall be expended for the purposes described in the preceding section: *Provided further*, That itemized statements covering all purchases and disbursements under this and the preceding section shall be filed with the Secretary of the Senate and the Clerk of the House of Representatives on or before the twenty-fifth day of each month after the taking effect of this act, covering the business of the preceding month, and said statements shall be subject to public inspection.

SEC. 18. That employment under the provisions of this act shall not exempt any person from military service under the provisions of the selective-draft law approved May eighteenth, nineteen hundred and seventeen.

SEC. 19. That the President shall cause a detailed report to be made to the Congress on the first day of each regular session of all proceedings had under this act during the year preceding. Such report shall, in addition to other matters, contain an account of all persons appointed or employed, the salary or compensation paid or allowed each, the aggregate amount of the different kinds of property purchased or requisitioned, the use and disposition made of such property, and a statement of all receipts, payments, and expenditures, together with a statement showing the general character and estimated value of all property then on hand and the aggregate amount and character of all claims against the United States growing out of this act.

SEC. 20. That if any clause, sentence, paragraph, or part of this act shall for any reason be adjudged by any court of competent jurisdiction to be invalid, such judgment shall not affect, impair, or invalidate the remainder thereof, but shall be confined in its operation to the clause, sentence, paragraph, or part thereof, directly involved in the controversy in which such judgment shall have been rendered.

SEC. 21. That words used in this act shall be construed to import the plural or the singular, as the case demands. The word "person" wherever used in this act shall include individuals, partnerships, associations, and corporations. When construing and enforcing the provisions of this act, the act, omission, or failure of any official, agent, or other person acting for or employed by any partnership, association, or corporation within the scope of his employment or office shall, in every case, also be deemed the act, omission, or failure of such partnership, association, or corporation as well as that of the person.

SEC. 22. That the provisions of this act shall cease to be in effect at the end of six months after the existing state of war between the United States and Germany and between the United States and Austria-Hungary shall have terminated and the fact and date of such termination shall be ascertained and proclaimed by the President; but the termination of this act shall not affect the exercise of such authority and power herein granted, as shall be necessary to speedily wind up the affairs of any enterprise already entered upon or to carry out any guaranty or contract made pursuant to the terms thereof, and such termination shall not affect any act done, or any right or obligation accruing or accrued, or any suit or proceeding had or commenced in any civil case before the said termination pursuant to this act; but all rights and liabilities under this act arising before its termination shall continue and may be enforced in the same manner as if the act had not terminated. Any offense committed and all penalties, forfeitures, or liabilities incurred prior to such termination may be prosecuted or punished in the same manner and with the same effect as if this act had not been terminated.

Passed the House of Representatives April 30, 1918.

Attest: SOUTH TRIMBLE,
*Clerk.*

The CHAIRMAN. The committee has met this morning for the purpose of considering the bill (H. R. 11259) to provide further for the

national security and defense by encouraging the production, conserving the supply, and controlling the distribution of those ores, metals, and minerals which have formerly largely been imported, or of which there is or may be an inadequate supply.

This bill passed the House on day before yesterday, and our meeting now is for the purpose of considering the bill and any other matters that may come before the committee.

Senator SHAFROTH. Mr. Chairman, the bill which I have before me is marked "Union Calendar 190, House of Representatives," I will ask whether this bill, as it is printed here, is the same as that which passed the House.

The CHAIRMAN. It is not. The bill that passed the House has not been printed for distribution. I imagine there were a few errors in it and they had to refer it to the House, but I expect to get the printed bill this afternoon. That is the bill as originally introduced, but some of the amendments as adopted in the House are not in the bill that you refer to and have in your mind.

The committee will hear first Mr. H. H. Lamson.

## STATEMENT OF HORACE HOLDEN LAMSON.

The CHAIRMAN. Mr. Lamson, what is your full name?

Mr. LAMSON. Horace Holden Lamson.

The CHAIRMAN. With what firm are you connected?

Mr. LAMSON. The John S. Lamson & Bros., 347 Madison Avenue, New York.

The CHAIRMAN. What is your business?

Mr. LAMSON. We have been importers and dealers in manganese ores and asphaltums for 65 years.

The CHAIRMAN. The committee would like to have you tell us about the business, as you are familiar with it, in regard to manganese ores in this country, and the importation of them, and also the production in this country.

Mr. LAMSON. Well, I will say, Mr. Chairman, that I do not know exactly how to address the committee, because I do not think that I have ever been before a Senate committee at any former time. All I can state is from a practical standpoint.

I do not know the full meaning of this bill or what it is going to amount to. I do know that there is not enough high-grade—what is called high-grade ore from an importer's standpoint—to cover anywhere near the demand for it. There is a great deal of low-grade ore, such as would go into the making up of spiegeleisen and ferromanganese. The high grade comes from Caucasus, and some of it comes from Japan. Practically all of the high-grade ore that is coming in by importation at the present time—that is, 85 per cent of the ore—is coming from Cuba, and the consumption of that ore is only forty or fifty thousand tons, and it does not cut much figure as against the other ore, which, I understand, is something like 800,000 tons a year.

There is a great deal of ore in the mines of the United States, and there are plenty of mines that can be developed in the United States on the lower grade ore, what you would call practically chemical ore. A great many manufacturers of dry batteries who formerly had to

have 85 to 90 per cent ore, had to take the 80 per cent ore. The result has been that the finished product is not nearly as good as formerly.

Now, it is an important proposition, I should say for the Government, as well as anyone else, because, as I understand it, these batteries are used in ambulances, and are used largely for flashlight batteries for Red Cross work, and it seems to me that some provision ought to be made to allow, anyway, a certain quantity of high-grade ore to come into the United States, because the production is not here; we have never been able to produce it. For instance, I have handled practically the entire output of the Crimora mine, which is one of the biggest producers. Last year I think we had something like five carloads of high-grade ore. That is a pretty small production. That grade would run about 84 to 87 per cent $MnO_2$, not metallic—I do not figure on metallic when I am speaking of high-grade ore. I do not handle the lower grade ores at all, those that run low in iron and low in copper, because if there is too much copper in it it short circuits in the battery trade, it would short circuit the battery.

Dr. MANNING. Mr. Chairman, I suggest that Mr. Lamson make clear the difference between chemical ore and metallurigcal ore.

Mr. LAMSON. I should say that metallurgical ore would be used for spiegeleisen and ferromanganese. Ferromanganese would be used in paints and varnishes and dry batteries, and high-class trade of that kind, and in making up some metals, and in also making up potassium permanganate, which they have asked me to come down and tell about, of getting the copper out of that product at the present time. But there are a number of manufacturers who are just starting to make it, and it is almost impossible to tell what the consumption of manganese will be for that purpose. I know two or three new concerns that have just started to make potassium permanganate. It is almost impossible to get at that until they have had some experience and know what quantities they use. I am not a chemist, and only know this from a practical standpoint; that is all, and the uses to which manganese has gone for years. It is also used—the high-grade ore—very largely in the glass and bottle trade. For instance, I have shipped to a glass and bottle concern some manganese that came from the Middle West. It was some of the Phelps & Dodge ore, and they came back to me and complained very much, saying that the ore was not right, that they had to use just twice as much as they did of the high-grade ore, and at the price manganese ore is to-day it, of course, makes a great deal of difference to them.

The CHAIRMAN. Do you know about how much manganese ore is used in this country per year?

Mr. LAMSON. Of all grades of ore?

The CHAIRMAN. Yes.

Mr. LAMSON. I should say somewhere in the neighborhood of 800,000 tons.

The CHAIRMAN. And of that amount how much do we produce?

Mr. LAMSON. I do not know; I saw those figures not a long while ago. I think we produced something like 300,000 tons last year, although I could not tell you accurately about that. I have not been interested enough in the lower grade of ore to go into that matter,

except as I heard it at a meeting here about a month or six weeks ago. I am better posted on what we call the high grade or chemical ore.

The CHAIRMAN. How much of that is used?

Mr. LAMSON. I should say 40,000 to 50,000 tons a year. Of that the largest proportion would be used by the National Carbon Co., of Cleveland. I should say that from 15,000 to 18,000 tons would be used by that one concern.

The CHAIRMAN. Please state to the committee just the use that the high-grade ore is put to.

Mr. LAMSON. It is used in dry batteries in making flash-light batteries, and it is also used as a drier in paint and varnishes, and it is used in glass and bottle trade. I believe there is also a very small quantity used in making up powder and in connection with powder, but the quantity is so small that it does not cut any figure. The largest trade is the battery trade, the next would be the glass and bottle trade, and the paint and varnish trade would be about the same, and as to the permanganate of potash there would be quite large quantities used of that, and then there are some concerns that are making up metals for which they have to have pure manganese by, I think, the old concern of Goldsmith & Thermit, New York—it is now the Thermit-Metals Co. They have changed their name since the war began. They are in the Equitable Building. They are making up manganese for the Government, I believe, and are making what they call a pure manganese, putting it in an entirely different state from what the ore is now in. I can not give you the formula and things of that kind, because if I could I should be in the manufacturing business.

The CHAIRMAN. What is the value of the high-grade ore that you are speaking of?

Mr. LAMSON. Do you mean from a purchasing standpoint? There is a good deal of difference.

The CHAIRMAN. Yes, from the purchasing standpoint.

Mr. LAMSON. It will run from $75 a ton to $120 a ton, according to the arrangement which you can make. In the crude state, as it comes from the mine, it has to be ground up after you receive it; it has got to be put into condition to ship to the different manufacturers. One manufacturer desires it in granulated form and another in pieces as big as a little finger nail, and another desires it in pieces the size of granulated sugar. Others desire it in the fine form. It is used very largely in the brick trade, and that low-grade ore can also be used for that purpose as well as the high grade.

Senator SHAFROTH. For what purpose do they use it in the manufacture of bricks?

Mr. LAMSON. To make a mottled effect. You have seen these bricks with little bright spots in them?

Senator SHAFROTH. Yes.

Mr. LAMSON. That is the manganese. They use it very finely granulated.

Senator SHAFROTH. Manganese is not a black ore, is it, when it is taken from the earth?

Mr. LAMSON. Not exactly black. Most people designate it as black but it is not. It is blue-black, or slate color. It varies in color considerably. I have seen some of it as crystal almost as silver ore.

It depends entirely upon where you get it. Take, for instance, the Nova Scotia ore. That is a light gray, a good deal of it, and crystalline. Take the Crimora ore; that is blue ore, blue-gray, and if you take other ores they would be still darker.

Senator SHAFROTH. What purpose does manganese have in these other uses that you stated it is put to?

Mr. LAMSON. Do you mean to what purpose is it put?

Senator SHAFROTH. Yes; what particular purpose does it subserve?

Mr. LAMSON. It is used in paints and varnishes, for instance; it is used as a dryer. For instance, in the making up of paints and varnishes. You do not want paint or varnish that is going to take six or eight days to dry. They put this in to dry it, the same as we put it in steel to purify it. In crucible steel they put a certain amount of manganese, and under the influence of the heat it liberates the oxygen and throws the impurities to the surface.

Senator SHAFROTH. That is the defects in the steel?

Mr. LAMSON. Yes, sir; it takes those out.

Senator SHAFROTH. And vacuums and things of that kind.

Mr. LAMSON. Yes, sir; it takes out those impurities.

Senator SHAFROTH. Now as to batteries; what purpose does it serve?

Mr. LAMSON. It is used, as I understand, for the oxygen content in the manganese and the higher it is in $MnO_2$ the higher it is in oxygen. Now some ores, although they may be identically the same—say two ores testing 25 per cent on the same analysis—might not be used for the same purpose. One may be a very hard ore that will retain its oxygen and not give it off under heat, and then there is soft ore which will liberate the oxygen quickly. There are many factors to be taken into consideration.

Senator SHAFROTH. In regard to the price of manganese, what is the lowest percentage of manganese that has a commercial value?

Mr. LAMSON. Well, at a meeting that I attended some time ago I got quite a little information here in Washington. I think they use a content as low as 15 per cent metallic manganese.

Senator SHAFROTH. What do you mean by metallic manganese?

Mr. LAMSON. Now, you have got me. You are asking me a question that I can not answer. $MnO_2$ is figured out from metallic: metallic is the unit of manganese, as I understand in the steel trade. You would purchase manganese at so much per unit, the unit of metallic manganese. Well, manganese running 50 per cent metallic $MnO_2$ would run about 80 per cent. There are some of those technical questions that I would not be able to answer.

The CHAIRMAN. I understand that there are about 40,000 or 50,000 tons of high-grade manganese imported?

Mr. LAMSON. Yes, sir; I should say in a year, 40,000 tons.

The CHAIRMAN. How much high-grade ore is produced in this country, if you know?

Mr. LAMSON. Well, of the ore, such as the concerns want, there is comparatively little. I would not say there are 2,000 or 3,000 tons produced here. I know that the Crimora people turn out some of that ore that is very high grade. Then there is another thing that has been found in very rare cases, and that is that manganese is formed in pockets. High-grade ore comes in pockets in the United States and is not found in the vein. If the cross vein is

large, producing a body of ore, you may get a pocket containing four or five or six hundred tons, or possibly a thousand tons, and then you are done with it.

Senator STERLING. Where is it found in this country principally?

Mr. LAMSON. In almost every State in the United States. It is found in West Virginia and in Virginia, some of the large mines, I think, and it is found in Tennessee, Georgia, California, Colorado, Utah, and Arkansas.

Senator STERLING. Where is it found in greater quantities or in paying quantities?

Mr. LAMSON. I should say in Virginia and in the Middle West. A great many mines have been developed in the Middle West, in Colorado and in Utah, and there are large deposits found in California. Some of them turn out to be pockets. We had one that we got a thousand tons from and tried to get more, but could not; it was a pocket.

Senator STERLING. Do you know whether any has been found in the Black Hills region in South Dakota?

Mr. LAMSON. I do not know; I could not say as to that, because almost all of these ores would be ores that would not interest me.

The CHAIRMAN. There was at one time at least a great quantity of manganese shipped from Leadville, Colo. Do you know whether that production is continuing?

Mr. LAMSON. I do not know. I know that Phelps & Dodge are shipping quite a large lot of manganese, because we have been buying it. We have not been able to get as much high grade as we want, and have had to take a low-grade ore. We have been taking quite a little of their highest grade ore, but they are shipping to the steel trade, as I understand it. They have mines out there.

The CHAIRMAN. Of this amount of high-grade manganese that is imported, how much do you use?

Mr. LAMSON. We are not awfully large handlers; I suppose 2,000 or 5,000 tons a year. We used to be one of the largest importers. We have not imported as much ore lately as we formerly did. The National Carbon Co. are the largest importers of manganese ores. They might do it for us and somebody else might have a man directly on the ground themselves. They are very large users.

The CHAIRMAN. You understand that the bill now under consideration is to encourage the production?

Mr. LAMSON. Exactly, but I think there is a whole lot of ore that could be produced here. I think there are a whole lot of people who have not the money to produce the ore, but if they were given encouragement and helped along, the United States Government would get a lot more ore than it is getting to-day. I am speaking now of steel ore, which they want.

The CHAIRMAN. From what I understood you to say a little while ago, when you first heard of this bill, you were of the impression that it might cause the importation to be affected.

Mr. LAMSON. To be affected on the higher grade ore.

The CHAIRMAN. And in your opinion that would be disastrous at this time to the industry of this country?

Mr. LAMSON. I do, really. It is not on account of the importation, because my importations are comparatively small.

The CHAIRMAN. That is, your idea is that any bill of this kind which would interfere with importations until the production in this country was sufficient to satisfy the needs and requirements of the country would be disastrous?

Mr. LAMSON. Yes, sir; if we can get it in this country, I say get it by all means. But it can not be done. It has never been demonstrated up to date. Then take ores from different sections. Take the finest manganese ore that has ever been produced. It comes from Nova Scotia. We have a mine up there. I got a special permit from the Canadian Government to bring it in, but we got only two or three hundred tons a year.

The CHAIRMAN. How much did you get?

Mr. LAMSON. Some ran 91 and 92 per cent. It contained a lot of copper, but we wanted it and wanted it badly. The glass and bottle trade is very anxious for that ore, and the battery trade wants it.

Senator SHAFROTH. What use it is put to in the bottle trade?

Mr. LAMSON. They use it for purifying the glass, giving it a clear color. They are eliminating manganese a great deal in the glass-and-bottle trade to-day. They have a decolorizer now, which has taken the place in many instances of manganese in the bottle trade. They are not as large users of manganese as formerly, but the battery trade is increasing very rapidly.

Senator SHAFROTH. Is there any use for it in the manufacture of powder, and if so, what is that use?

Mr. LAMSON. That I could not tell you, because if it was it would be a secret process. The only manganese that we would sell would be to some fuse company. I think we have sold a few barrels to the department, but not enough to cut any figure. They may buy of others, I do not know. I could not tell you what use it was put to there.

The CHAIRMAN. Have you read this bill?

Mr. LAMSON. Just portions of it.

The CHAIRMAN. Your interest in the matter is then not personal——

Mr. LAMSON. Not personal, at all.

The CHAIRMAN. You are not in opposition to the bill?

Mr. LAMSON. Absolutely not.

The CHAIRMAN. But in seeing that the importation of these high grade ores is not interfered with until production in this country is sufficient to satisfy our needs?

Mr. LAMSON. My only intention in bringing the matter before you was this: I do not know possibly as much as a lot of you gentlemen do here, but there are a lot of points that might be brought out that might seriously affect things by putting it right on a war basis for the Government, because we do need batteries. I am not talking for myself either, because I do not sell the National Carbon Co. one dollar's worth of manganese ore, and they are the largest manufacturers of batteries in the United States. As a matter of fact, they are really a combine and control a great many companies; they have bought up a great many of the other companies. Then there is the Manhattan Electric and the Western Electric Co. and all of those companies which are manufacturing batteries, and a great many of them are manufacturing these flashlight batteries which are used very

largely by the Red Cross, and they are also used by our boys in the trenches. You know what the flashlight batteries are used for. In some of those batteries they do not use manganese; they use graphite instead of manganese, but there again the demand for the flashlight batteries would not be nearly as large as for the larger batteries, because naturally in one of those small batteries there is a comparatively small amount of manganese.

The way the question came up with me was that not long ago we had a number of orders from Canada for flashlight batteries that were going into the Red Cross work, and you have to get permission nowadays to ship into Canada—and the way it came up with me, they let us ship into Canada every year and then simply one barrel of ore stopped it, and I came down to find out what the trouble was. It seemed that they did not make any distinction between high-grade ore and low-grade ore, and in some way or other it got into the wrong department. It should have come in as manganese ore and they applied, I think for chemical ore. It was just simply on account of calling it chemical ore instead of manganese ore that it was stopped. I thought it was rather odd that the United States Government would not want Canada to get the stuff for flashlight batteries. There are a great many of our concerns in the United States that are making them in Canada for their own representatives. For instance, there is the Sherwin-Williams Co., a big paint concern, and the National Carbon Co. They all have their branches, and a great many more of them are making a number at the present time. But, as I say, they all have their branches there and they are all using those people. As a general rule, if they get using a certain importation they do not like to change because it makes a great deal of difference in their formula. Take manganese, for instance, a shovel full of manganese might spoil three or four thousand dollars' worth of varnish, and it would not pay to change from one manganese to another. They are liable to spoil a great many thousand dollars' worth of goods with a very small quantity of ore. So they always like to continue with the same people if possible. So if Sherwin-Williams was buying ore of John S. Lamson or Tom Jones, the Canadian branch would buy the same ore, because their formulas would all be made up in the same way.

The CHAIRMAN. Then, as I understand you, you feel that the general purpose and object of a bill of this kind are good?

Mr. LAMSON. Yes, sir: I do most decidedly. I think it is a splendid thing to shut off all these importations if it can be developed in this country. I should like to see it done.

The CHAIRMAN. The matter, then, that you would be particularly interested in would be the administration of the law after it had been passed?

Mr. LAMSON. Well, I do not want to pretend to know more than some one else, but would like to have the lawmakers realize the different points and the difference between the different ores; that is all. With that knowledge I am not afraid that the United States Senate is going to make a "bull."

The CHAIRMAN. The committee would be glad to hear from you on the licensing feature that you have spoken of, and the experience

that you have had under the present law that you are operating under.

Senator JONES of New Mexico. Before going into that, I would like to get a little more information. Where is this high-grade manganese ore brought from now?

Mr. LAMSON. It is coming from the only place that I know of. In fact, the only very high-grade ore is coming from Cuba. They have some very large deposits near Santiago, and this last year I see that they have been developing those mines. I think some belong to some of the steel companies and some to private individuals. I know practically all the high-grade ore I am bringing in is coming from Cuba. I can not get it here.

Senator JONES of New Mexico. Is there sufficient quantity of that ore in Cuba to supply the demand here?

Mr. LAMSON. Not up to date. They are developing there very rapidly. They may develop it, but it has not been so up to date. Until within the past two years Cuba did not cut any figure in high-grade ore at all. It has only been within the past year that they have been developing these higher-grade properties.

Senator JONES of New Mexico. As I understand you, the high-grade manganese ore is a thing distinct from the low ore as to its uses, etc., as much so as one metal is practically from another?

Mr. LAMSON. I should say so; most decidedly.

Senator JONES of New Mexico. So, in dealing with the question of manganese ore, they really have two things to deal with—the high grade and the low grade—in the uses to which each may be put. Now, take the high-grade ore as a separate mineral; what is the demand for that in the United States?

Mr. LAMSON. I should say, between forty and fifty thousand tons a year. It is only a comparatively small amount.

Senator JONES of New Mexico. Where does it come from now?

Mr. LAMSON. The bulk of it comes, so far as I know, from Cuba; some from Japan, unless the shipments have been curtailed from Japan. Japan formerly furnished us from two to three thousand tons of high-grade ore each year, and in the last three or four years the demand for the materials into which the high-grade ore goes has increased, so that they are using a great deal more high-grade ore to-day than three or four years ago, which is naturally because of this demand from the other side and for dry batteries increasing. There is three-fourths of a pound, I think, of manganese that goes into every dry battery, a 6-inch cell. You can imagine that amount if a man is turning out 100,000 batteries a day. It means quite a large quantity of high-grade ore that they will need.

Senator SHAFROTH. What do you mean by battery—just a small battery?

Mr. LAMSON. You know what these dry-cell batteries are. You have them for your sparker for your automobile. It is just a dry cell—one of these circular cells.

Senator SHAFROTH. The cells are about a cubic foot, are they not?

Mr. LAMSON. No; I should not say that. I think they are about 9 inches across the top and 3 inches in diameter.

Senator SHAFROTH. You say it takes three-fourths of a pound of manganese?

Mr. LAMSON. Yes, sir; of manganese.

Senator SHAFROTH. To put that in proper condition?

Mr. LAMSON. Yes, sir; one of the main ingredients of that is manganese.

Senator JONES of New Mexico. And dry cells for telephones?

Mr. LAMSON. Yes, sir; for telephones. It is used in the place of a magneto and to get your spark in automobiles.

Senator SHAFROTH. And to ring bells?

Mr. LAMSON. Yes, sir; it is also used in making little flash-light batteries. You know, you simply push a button. They are used very largely in the Red Cross work also. I know one of our customers in Toronto had a very large order from the Red Cross and also from the Government.

Senator JONES of New Mexico. Prior to the war where was this high-grade ore coming from?

Mr. LAMSON. From Japan. We got some high-grade ore from Italy, but very little. Most of it came from Japan and from Nova Scotia—oh, before the war, you said?

Senator JONES of New Mexico. Yes.

Mr. LAMSON. Probably all of it came from Caucasus in Russia. They have mountains of it there, and it formerly used to sell in New York City at from $12.75 to $14.50 a long ton of 2,240 pounds delivered in New York. You could buy it at about $15.50 delivered at Cleveland for a long ton.

Senator SHAFROTH. Are they getting any from Russia now?

Mr. LAMSON. No, sir.

Senator SHAFROTH. Not since the peace terms were signed?

Mr. LAMSON. Not since the war. They may have had one or two shipments gotten in, but not enough to cut any figure.

Senator SHAFROTH. Nothing since the establishment of peace there?

Mr. LAMSON. No, sir; not since the war began there has not been any Caucasian manganese coming in, unless it was an odd shipment here and there, because I had 2,000 tons bought in Germany when the war began, and I never got 1 pound of it—I do not mean when we declared war, but four years ago, and we never got a pound of our ore.

Dr. MANNING. I would like to call attention to the fact that he is speaking of metallic manganese. The record shows that the importations in 1917 were over 500,000 tons imported from Brazil, 50,000 tons from Cuba, and 60,000 tons from the West Indies and Central America, and this ore that is used is high-grade ore and is used in steelwork and manufacture.

Senator JONES of New Mexico. That is what I was trying to get at.

Mr. LAMSON. Eliminating that——

Dr. MANNING. He is speaking of chemical manganese.

Mr. LAMSON. I am speaking of that which we class as chemical ore. It seems that they call it all manganese ore in the War Trade Board, but they do not seem to designate it, and when I call it high-grade ore it is simply a trade name that we have given it. For instance, I would say that high-grade ore would be an ore testing 80 per cent $MnO_2$ or better. When you get down below that it might possibly be used for chemical purposes or higher grade purposes, but it would not be nearly as effective as 80 per cent or better. The minimum on which we used to buy was $MnO_2$ in Caucasus.

If it fell below that you had the opportunity to reject your shipment, but since it has become difficult to get high-grade ore naturally the people have had to take the lower-grade ore and they use a great deal more of it. They have to get strength and if it only tests 70 per cent they would have to use so much more of the 70 per cent than the 85 per cent, and loss of time, and they can not get even the same results. A man might have a carload of 85 per cent ore and take the 75 per cent ore and mix them together and get 80 per cent and average it up. But that is rather unsatisfactory because one ore may be hard and liberate its oxygen very slowly and another might be soft ore and liberate its oxygen very freely.

Senator SHAFROTH. Is there any way of producing from this low-grade ore high-grade ore?

Mr. LAMSON. I believe some people have tried to do it, but I do not think they have it on a commercial basis. If we could do that it would eliminate the whole trouble.

Senator JONES of New Mexico. What is the present machinery for getting this ore on the part of the manufacturer, for instance, who uses it? Where does he get it now, through what channel?

Mr. LAMSON. Manganese ore?

Senator JONES of New Mexico. Yes.

Mr. LAMSON. He gets it from the importers or dealers or people connected with the mines. For instance, we furnish and handle practically every paint and varnish company in the United States between the Atlantic and the Pacific Oceans; perhaps 40 per cent of those varnish and paint concerns buy their manganese from us.

Senator JONES of New Mexico. Are you able to supply your trade?

Mr. LAMSON. We have been in a way up to date, yes, sir; but we have been importing from Cuba, and as I say, I had the output of this mine in Nova Scotia, so we are very fortunate in being able to get a supply of high-grade ore. But that mine has either petered out or has been exhausted. We can not get any more from it. Every concern that ever used that ore liked it. I think it is the best one that has ever been found.

Senator JONES of New Mexico. Do you anticipate that your supply is going to be diminished?

Mr. LAMSON. Yes, sir; if we can not get it from Cuba.

Senator JONES of New Mexico. I am not speaking about "if." You can get it from Cuba, can you not?

Mr. LAMSON. Yes, sir; I am going to Cuba now from here to try to get a further supply, to make arrangements for a larger quantity of ore. I have some coming in but not nearly enough. There is a very large demand for high-grade ore, but it is very hard to get.

Senator SHAFROTH. Does this bill attempt to limit the amount that can be imported from Cuba? I mean by that, are we putting an embargo on importations from Cuba?

Mr. LAMSON. Not that I can see. An embargo may be put on later. I understand that they have taken off the vessels bringing in the Brazilian ore.

Dr. MANNING. Forty per cent. The War Trade Board has limited the importation into this country to about 40 per cent of Brazilian manganese ores.

Senator SHAFROTH. But only as against Brazil?

Dr. MANNING. That is as I understand it. It does not apply to Cuba.

Senator JONES of New Mexico. Does this Brazilian ore come into competition with the ore that you have been talking about?

Mr. LAMSON. To a certain extent; yes, sir; because, as I say, take for instance the National Carbon Co. as an illustration. Five years ago they would not use Brazilian ore at any price, but they have been using very large quantities of it. They are treating the Brazilian ore electrically to take out a certain percentage of the iron. The iron in a great deal of that ore is very high—4½ to 5 per cent and over 1½ per cent is practically useless for the battery trade, because it will short-circuit the battery.

Senator JONES of New Mexico. Do you believe it will be a good thing to prohibit these importations from Cuba?

Mr. LAMSON. No, sir; I do not; not until we can produce high-grade ore here.

Senator JONES of New Mexico. Now, until we can produce it here, how would you go about producing it here?

Mr. LAMSON. Well, a man would have to have an unlimited capital, I suppose, and would have to go out and develop every property that he knew of until he could get a high-grade ore. There is not very much high-grade ore. I have tried a dozen different properties myself. I just turned one down yesterday that I have been out to Arkansas to go over. I thought they had a high-grade property there. On a sample coming in it was found to be a pocket sample. I had it tested for $MnO_2$ and got the analysis yesterday and found that it tested 39 per cent $MnO_2$ instead of 80 per cent. It was absolutely useless. There are very many people to-day who have heard that fortunes have been made in manganese; some people have made a great deal of money; and the moment they find manganese deposits they think they have a gold mine. The great trouble with those fellows is that they will send in a handful of manganese ore that they have picked very carefully and given that as a representative sample and it is not a representative sample at all. They seem to forget that simply analyzing these different ores runs up into hundreds of dollars for useless samples that are sent in, and then write and ask a man to ship a carload, and he can not do it. I had 10 tons of it ordered last August and it came in day before yesterday as a sample shipment, and how are they going to be able to ship a hundred tons a day?

The CHAIRMAN. You have been rather active, have you not, since the war started in trying to stimulate production of high-grade manganese ores in this country?

Mr. LAMSON. In a small way, yes, sir. I have tried to get them for my customers.

The CHAIRMAN. What have you done along that line?

Mr. LAMSON. I have put in money in the Nova Scotian property, because, in my opinion, that was the best ore in the world.

The CHAIRMAN. And now that has gone?

Mr. LAMSON. Yes, sir; I have helped the Crimora people to a certain extent to get me some ore from there, and I have advanced money to this property in Nova Scotia, because Nova Scotia is a good place if the ore is developed, but it is pocketed; that is, you may get out three or four hundred tons and you are done. There is no money there; you can not get it. The people owning the mine do not have it.

I have this mine that I have just spoken about in Nova Scotia. I think it has been in bankruptcy 20 times in the last 20 years, and then they began again and formed a little company and are making a little money, and then they lose it.

Senator JONES of New Mexico. What I am trying to get at is, What is the necessity now for doing anything with regard to high-grade manganese ore?

Mr. LAMSON. In the condition that matters are in at the present time there is not any; I do not see any need of doing anything. I was speaking to Mr. Jaras about this matter the other day, and he asked me if I would go down to Washington and tell them what I knew or thought I knew in reference to the different uses to which ore was put, and I told him that I would be only too glad to do it if I could do anything, and that is the reason I happen to be here.

Senator JONES of New Mexico. Now, my training in connection with legislation has been along this line: First, find out what the mischief is, what the difficulties are, and then try to find some remedy to meet the difficulty. Now, I have not been able from your statement here to discover what the mischief is or what the difficulties are with the present situation.

Mr. LAMSON. Well, the only thing that I did was that in speaking of the bill I thought that there might be some law made to prevent the high-grade ore coming in, with the lawmakers really not realizing that the United States has not been able up to date to produce enough high-grade ore to go around, not anywhere near enough. What I wanted to do was to bring it to their attention; that was all—before it was too late, because after it is finished then it takes a long time to undo what has been done.

Senator JONES of New Mexico. In other words, you are fearful that something might be done that would interfere.

Mr. LAMSON. I was informed that the importation of manganese was going to stop from Cuba and from South America. That is what made me interested in the first place. It does not make such a great deal of difference to me from the standpoint of a plain business man, because the quantity of manganese we get we have to scurry around to find it somewhere. I could get what I need from the Crimora, but I am going to Nova Scotia to see if I can get some from there, because that is a finer ore.

Senator JONES of New Mexico. Do you have any difficulties about the prices in connection with the high-grade ore?

Mr. LAMSON. In buying?

Senator JONES of New Mexico. Yes.

Mr. LAMSON. Everybody wants the highest price they can get, naturally. We have to take what we can get. I do not question the prices; if a man offers me ore and it is satisfactory, I generally take it.

Senator JONES of New Mexico. You can find a purchaser for it from yourself?

Mr. LAMSON. Yes, sir.

Senator JONES of New Mexico. Then in considering the question of the high-grade manganese, it is a question as to whether or not the importation should be stopped, in your own opinion, is that it?

Mr. LAMSON. Well, the only thing that I would bring to your attention is to ask some one—for instance, ask the National Carbon Co.; they are familiar with manganese ore; they know it from a technical

standpoint a great deal better than I—ask them what they think of it, what their idea is of it, because they are the most important factors in the market on it. They want the market; they have gone to work and leased mines in Virginia so as to mine and produce their own ore.

Senator JONES of New Mexico. Are we not to consider, or should we not consider, this question: Here we have an importation of forty or fifty thousand tons of high-grade manganese ore. It can be obtained in Cuba, very near to the United States——

Mr. LAMSON. Yes.

Senator JONES of New Mexico. The cost of that tonnage can not be very great, can it? What is the freight cost?

Mr. LAMSON. I really could not tell you; it is pretty high now. I think it is about $12 a ton to bring it in, but I am not positive. When you ask me for figures, I can not give them accurately because my employees are the ones who take care of the freight rate; I do not do that. But, if I remember correctly, it is about $12 a ton as against formerly $3 to $4 a ton before the war. Of course, that makes a big difference; but, as I say, it does not make any difference—if a man says he wants $90 a ton for his ore, and it is ore that I want, I will take it because I need the ore.

Senator JONES of New Mexico. That would require, to bring it all in, one trip for ten 4,000-ton ships.

Mr. LAMSON. Yes; but you would not get very many people to bring high-grade ore in those quantities.

Senator JONES of New Mexico. It comes in broken lots?

Mr. LAMSON. Yes, sir; where you can get the space. We generally have ours coming in 50 or 100 tons at a time. Now, if I were the National Carbon Co., where I was a manufacturer and could use it all, I would not hesitate to bring in 5,000 tons at one time, and they could. There is one thing that is against the Cuban ore, and only one thing that I know of, and that is that most of it contains a percentage of copper that is bad for the ore.

Senator JONES of New Mexico. Do you know what it cost, or have you any idea of what it would cost, to develop in the United States a sufficient supply of that ore?

Mr. LAMSON. To build up the trade?

Senator JONES of New Mexico. To develop or produce that quantity of ore in the United States.

Mr. LAMSON. No, sir; I have not, because I do not know where you would get that quantity of high-grade ore.

Senator JONES of New Mexico. How would you develop that quantity of high-grade ore in the United States?

Mr. LAMSON. I think one of the first things I would do would be to go to the Crimora people. They have a high-grade ore on their property. Whether it is in pocket formation or not I do not know.

Senator JONES of New Mexico. Where is that?

Mr. LAMSON. In Virginia. Their office is in New York. I think in the Mills Building.

Senator STERLING. Do you treat the ore—that is, our company—in any way? Do you reduce it?

Mr. LAMSON. No, sir; the only thing we do is to grind it. We put it into granulated form or powdered form or in any form that our customers may use it.

Senator SHAFROTH. In its original state does it come in large lumps?

Mr. LAMSON. Some does and some is small. You can get a piece weighing three or four hundred pounds; it comes from pieces that big [indicating], as big as your thumb nail. Some of them want the powder, when it comes in a bag, and some of the hard ore will come in bigger pieces. The soft ore would naturally break up quicker than the hard ore.

Senator STERLING. Does it come usually in bags or in bulk?

Mr. LAMSON. It comes in both ways. They generally bring it in in bulk; they formerly used to ship it in bulk, but generally ship it in bags now, unless you are bringing in a full cargo, and then they bring it in in bulk. But you see, as to manganese ore at $12.50 a ton or $13 a ton, if you lost a couple of tons it would not make any difference, but at $90 a ton it makes considerable difference.

Senator JONES of New Mexico. What was the price of this ore before the war?

Mr. LAMSON. From $12.75 to $14.50, delivered in New York.

Senator JONES of New Mexico. How much is it now?

Mr. LAMSON. It runs all the way to $110 a ton. I paid $110 a ton for some Brazilian ore not long ago.

Senator JONES of New Mexico. There has been some suggestion made that the way to increase this production is to increase the price.

Mr. LAMSON. I think the fellows have made an awful big fight for their ore. They are getting fabulous prices as compared with what they did before.

Senator JONES of New Mexico. You would not advise increasing the price above the present price in order to encourage the production of this ore in the United States, would you?

Mr. LAMSON. Not unless it was under extraordinary circumstances. I know with the basis this concern of mine, charged me in Canada, although I financed the thing, and they paid a dividend of less than a 100 per cent in three months, and they always told me they had lost money on it. I think I paid about 8 cents a pound—$150 a ton. I paid almost any price because it was the finest ore I ever saw, and for certain purposes it could not be beaten. I think the people would pay the price of manganese ore. I do not see any reason why Cuban ore, except for the difference in freight and the difference in labor, should cost very much more now than before the war.

Senator JONES of New Mexico. Why does it? Have you any knowledge as to that, why the price has gone so high?

Mr. LAMSON. Simply because they can demand the price, that is all. It does not cost any more except for the increased cost of machinery and freight and things of that kind, that will never make it anything like $90 a ton.

Senator JONES of New Mexico. Is that ore supply in Cuba controlled by a monopoly, or anything approaching a monopoly?

Mr. LAMSON. I would not say so. I do not think it is. I think there is one company that owns several of the deposits, down near Santiago. There are quite large deposits there, but they have been able to find very little of this high grade ore.

Senator PHELAN. Is the high price a matter of ships?

Mr. LAMSON. No, sir; it is simply that they have been able to demand the price and get it.

Senator PHELAN. I means that transportation is very much higher than it was?

Mr. LAMSON. Oh, yes. The transportation that was formerly $3 a ton is now $12 a ton, but as against the $90 price and the formerly $20 price, the comparison is not there.

Senator PHELAN. Was not the collier *Cyclops* laden with manganese from Brazil?

Mr. LAMSON. Yes.

Senator PHELAN. That was picked up at Bahia, was it not?

Mr. LAMSON. I do not know as to that.

Senator PHELAN. Incidentally I may say that a man told me that there was a German crew on the cruiser that had been blown up in a harbor on the declaration of war, and he was of the opinion that a plant was put upon that collier when she left Bahia—I asked him the question if she left Bahia while she was laden with manganese for this port, so the presumption is she had left Bahia, and in that event he said the number of Germans around there would justify him in saying that it was a plant on board the *Cyclops* that resulted in her destruction. The Germans are there, because they are held by reason of the fact that the German cruiser has been interned, and on the declaration of war the Germans blew it up.

Mr. LAMSON. Did it not come out in the papers that the commander of the *Cyclops* was a German?

Senator PHELAN. He was of German ancestry, but had 20 years in the United States service, I think.

Mr. LAMSON. I thought there was some statement in the paper about that.

Senator PHELAN. But there was no suspicion that I heard that there was sufficient German influence in that port to plan and execute the destruction of a boat by a plant, if they were disposed to do so, and those who served on the boat as longshoremen and stevedores were negroes, and some of them were very disloyal and outspoken against the United States. Bahia is an English port, is it not?

Mr. LAMSON. Yes, sir.

The CHAIRMAN. Mr. Lamson, a short time ago you referred to an experience that you had in connection with the licensing feature of the bill that is now before one of the departments. Will you explain to the committee your experience in connection with the licensing feature?

Mr. LAMSON. As I understand it, we have to get a license now for everything we ship into Canada. Even if we want to ship a barrel of manganese there is a great deal of red tape in getting it there. As a matter of fact, some of those concerns have had me ship 5 tons of manganese by express, and you can realize that that is a very expensive proposition, to ship manganese ore, which is a very heavy product, by express. One barrel of it weighs about 900 pounds, some weighing a thousand pounds, and it was a specially onerous one when it is considered that the stuff went up there by express when it was particularly needed for Red Cross purposes. I do not bring that forward as a plea that we wanted to get it up there on war duty, be-

cause if it had been paint and varnish we would have been just as anxious to ship our customer. But that particular lot, I think, was wanted by one of the dry-battery concerns that was making up orders for the Red Cross, and I think they allowed us to get some of that through. I do not know the details of it as much as my young man who does the shipping in the office, but I know that they let three or four shipments go through, and all of a sudden they held up one and refused us permission, and we came down to Washington to see what the trouble was. They had not held up any before that, and we explained the circumstances, and they said they did not want to let any high-grade manganese, as I understood it, out of the country, even into Canada. I said of the amount of manganese going there I do not suppose Canada uses—outside of the National Carbon Co.; I will eliminate them—I do not know what their uses are—but outside of them I do not suppose there would be 2,500 tons used in Canada. The 2,500 tons going to Canada is only to help Canada, and it would not hurt the United States.

The CHAIRMAN. I understood you to say a while ago that you got some manganese up in that country?

Mr. LAMSON. Not from Canada, but Nova Scotia; that is way up near Halifax. The mine where I was getting my ore was from 40 to 50 miles from Halifax.

Senator SUTHERLAND. They would not have to get a license to ship from Halifax to Canada, as they would from the United States to Canada, would they?

Mr. LAMSON. They very readily gave me an import license into the United States; the English Government at Ottawa did.

Senator SUTHERLAND. I am speaking of the shipment from Halifax to your customers in that part of Canada—was it?

Mr. LAMSON. We do not ship from Halifax.

Senator SUTHERLAND. I know you do not; but you could ship from there.

Mr. LAMSON. No, sir; because we do not have any mill at Halifax to grind the ore. We have to grind that ore, make it into a powder, granulate it, before we ship it.

Senator SUTHERLAND. Nobody does that up there, I suppose?

Mr. LAMSON. No, sir; we bring the ore to New York and grind it and ship it out. As a matter of fact, that ore went right back into Canada. Then the thing went along, and they purchased our shipment; that is, they said they would allow us to ship 500 pounds at a time—five or six hundred pounds at a time, or something of that kind, and that went along, and all of a sudden we got another communication saying that the license had been refused. Then I came down here. It seems to be because I put on my notice high-grade manganese or chemical manganese, and I should have had it manganese ore. If I had had it manganese ore it would have gone to a different department, which understood the matter better. I think that was the trouble. But they let us ship one or two barrels at a time anyhow, and once in a while I think they allowed us to ship 8,000 pounds in one shipment. The people need it up there, and I do not see any reason why the Government should hold it back from Canada.

The CHAIRMAN. As to this shipment that went by express, was that because of the urgent need of it in Canada?

Mr. LAMSON. Yes, sir; they were begging us for it. I would not make this as a positive assertion, but as near as I can remember with respect to some applications that were made for licenses, it took four weeks to get them. Now, as you may know, there are a whole lot of those concerns that run out of material very quickly. Some of them do not always keep a full four weeks' supply on hand.

The CHAIRMAN. Just explain to the committee your experience in the operation of the licenses, what you have to do, and the course you have to follow.

Mr. LAMSON. Really I am a little green on that, Senator. Those details are all taken care of in the office. All I know is that we have to apply by sending in a blank of some kind to the Government, to Broadway, and from there I think it comes down here, in order to give us a license or a permit to make a shipment into Canada of manganese ore. Now, as to whether we have to do that on asphaltum or not I could not tell you.

The CHAIRMAN. If you received a telegram, say, to-day in your office at New York for a certain shipment of manganese, you would have to send to Washington?

Mr. LAMSON. We would have to send to Broadway, to the License Bureau, and then I think it comes to Washington and is passed on here in Washington in the War Trade Board, and it is then forwarded to us again as accepted, with a permit to ship a certain amount. There is an awful pile of red tape there.

The CHAIRMAN. So you are never able now to get a shipment out as promptly as before the war?

Mr. LAMSON. No, sir. If we get an order by telegram, we get it off the same day.

The CHAIRMAN. Now, about how long does it take?

Mr. LAMSON. Some take three or four weeks, as I say. Some of them, I think, went through in fairly good time, perhaps six or eight days, but it takes a number of days to get even the quickest out.

Senator SUTHERLAND. Are the demands in this country sufficient to use up the manganese manufactured in this country, or prepared in this country; is the demand for use in this country sufficient to use the visible supply?

Mr. LAMSON. Oh, my goodness, yes.

Senator SUTHERLAND. Then it is not strange that they hamper you in shipping it out of the country, is it, because if you ship any out of the country it is depriving some American of the use of that. Now, let us get back into the matter of high-grade and low-grade ore again. What percentage, for instance, is high grade and low grade?

Mr. LAMSON. I should say anything above 80 per cent would be called high-grade ore. I should say anything above 60 per cent $MnO_2$ and less than 1½ per cent of iron and only a trace of copper. Battery companies do not want more than 2½ per cent of copper. If it runs over that, they do not want it for electrical purposes. For instance, I am paying $110 for ore. I get that ore in New York to-day and put it in shape to ship it to my customers, and before I do it, it costs 6½ cents a pound. The largest user is the National Carbon Co. They say, "We won't give over 5 cents a pound." I can not give it to them for that. I have to have an outlet for my ore. I have paid $110 for that. Now, there are some people in Canada

who can not force you to sell it, and who want to get your business. You can make your price and get your profit. If the National Carbon Co. will pay me a profit on all the ore I have, I will be tickled to death to ship it to them. But they say arbitrarily we won't pay over such a price. They are in a position to bring in four or five or six hundred tons, and we small men can not do so. In the first place, we do not know where to get it or how to get it, and there are no mills that can put it in shape to use except in New York.

Senator SHAFROTH. What do you say of granting power to fix a maximum price for manganese or any of these other ores?

Mr. LAMSON. Do you want me to be perfectly frank?

Senator SHAFROTH. Yes.

Mr. LAMSON. I think it would be an awful hard proposition. I think it would work a great injustice to some people, because there are some people that have a pull, either with the mine owners or in some way, who are buying their ore a great deal cheaper than others. I know there are some people who are buying their ore under contract now at $70 a ton, where I have paid $100. Now, it would work a pretty great hardship.

Senator SUTHERLAND. Is that same thing not true in the coal business or any other business where we have had trouble about prices?

Mr. LAMSON. I suppose it would be.

Senator SHAFROTH. Are these ores ever associated with each other where it would produce an effect like fixing a maximum price on wheat? We have a maximum price which we fix on wheat, and the tendency has been to make other and greater uses for other cereals, and they went up way above the price of wheat.

Mr. LAMSON. If you would regulate the buying price also so that a man could get a margin of profit on it that was fair; yes, sir. It takes a great deal of handling; small business costs a great deal more than large business. Take, for instance, storage charges. The Government has taken over a great many storehouses in New York City; they have taken over the New York dock and the storehouses where we formerly stored our goods. That has necessitated my going out and hiring a warehouse myself. The other day I got a little second-hand store to store what I have. Cartages have gone up, and everything has gone up in price.

Senator SHAFROTH. You think, then, that it is almost impossible to fix a maximum price that would be fair to all people?

Mr. LAMSON. I do; yes, sir. On some ore I have been paying $85 a ton, some $160, and some I am paying $90 a ton, and some I am paying $100 a ton for.

The CHAIRMAN. The same quality?

Mr. LAMSON. No, sir; one may be 5 per cent better than the other or 3 per cent, and yet I must pay $90 a ton for one ore and $110 for identically the same quality.

Senator SUTHERLAND. The difference in price does not reflect the difference in quality?

Mr. LAMSON. Not necessarily; no, sir.

Senator SHAFROTH. Is there any objection to fixing a minimum price, say, where the Government should buy ores for the purpose of encouraging production, at the minimum price, and then if the demand increase increase it to something higher, let that be a further encouragement for the production?

Mr. LAMSON. That might be all right for the present, but if the war should stop I think the Government would get everlastingly stung, because we would start to rush in that ore from Caucasus and the Government would be paying an awfully high price for the ore.

Senator SHAFROTH. Suppose that minimum price were fixed upon the American production.

Mr. LAMSON. Then you would have to take care of the importations, and you would have to fix a price so that the importations could not come in here and cut out the American business.

Senator SHAFROTH. But if it applied to the American production it would encourage American production, would it not, to fix a minimum price with the assurance that it would be for a certain length of time?

Mr. LAMSON. But some fellow might not get what he thinks is the worth of his ore.

Senator SHAFROTH. But if it were a minimum price?

Mr. LAMSON. I think if you set a price for a certain grade of ore; yes. Take it from a metallic standpoint, for instance; have it regulated on the same basis as the steel trade formerly used to do. Formerly you would write to a steel concern and say, "I have some manganese." They would send you back a scale of prices and say, "Now, gentlemen, we will take your ore at these prices. Those are our prices." That is as I understand it. Of course, I never did much in the steel business. They pay so much a unit, so a man would know exactly what he was getting for his ore.

Senator SHAFROTH. Mr. Chairman, I shall have to leave the committee to go to the Senate, and as I should like to be here during these hearings, I move that we now adjourn until to-morrow morning at 10 o'clock.

(Thereupon, at 12 o'clock a. m., the committee adjourned, to meet at 10 o'clock a. m., Friday, May 3, 1918.)

# MINERALS AND METALS FOR WAR PURPOSES.

**FRIDAY, MAY 3, 1918.**

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met, pursuant to adjournment, at 10 o'clock a. m., in room 450, Senate Office Building, for the purpose of resuming the consideration of the bill H. R. 11259, Senator Charles B. Henderson (chairman) presiding.

Present: Senators Shaffroth, Walsh, Jones of New Mexico, and Ashurst.

The CHAIRMAN. I was informed last night by Mr. Bernard Baruch that he has testified before the House Committee on Mines and Mining, and that he had nothing further to add to the statement that he made before that committee.

I make this announcement so that the attention of the members of the committee may be called to the testimony of Mr. Baruch in the hearings before the Committee on Mines and Mining of the House of Representatives, held March 21 and April 2, 1918.

## STATEMENT OF HORACE H. LAMSON (Resumed).

The CHAIRMAN. Mr. Lamson, Senator Jones desires to ask you a few additional questions.

Senator JONES of New Mexico. Mr. Lamson, have you familiarized yourself with section 5 of this bill, regarding the licensing feature?

Mr. LAMSON. No, sir; I just glanced over it; that was all. I simply saw a rough copy of it.

Senator JONES of New Mexico. I can not say that I have studied it carefully, but section 5 provides for the licensing of any person engaged in the business of mining and manufacturing, storage, or distribution of those ores, and provides:

> Whenever the Secretary of the Interior shall find that any royalty, charge, price, commission, profit, or practice of any licensee is unjust or unreasonable, or discriminatory and unfair, or wasteful, or causing waste, and shall order such licensee within a reasonable time fixed in the order to discontinue the same, unless such order, which shall recite the facts found, is revoked or suspended, such licensee shall, within the time prescribed in the order, discontinue such unjust, unreasonable, wasteful, discriminatory, and unfair royalty, charge, price, commission, profit, or practice.

Now, how would such a provision as that operate in the trade in which you are engaged and with which you are familiar?

Mr. LAMSON. I do not think it would affect us at all, except this, that if we were one of the licensees or handlers of manganese, we

would not object to that clause at all. If we were doing anything that was unjust or unfair, we would be perfectly willing to rectify it at any time. We want a legitimate profit. In some instances we may make more profit than in others, but we would not hesitate to say that that clause is all right.

Senator JONES of New Mexico. Is the profit which you make on these various ores uniform?

Mr. LAMSON. No, sir; it is not.

Senator JONES of New Mexico. You stated yesterday that you paid various prices for similar grades of ore.

Mr. LAMSON. We do; yes, sir.

Senator JONES of New Mexico. In your business then, with that fluctuation of price, how do you arrive at a reasonable profit?

Mr. LAMSON. It is rather hard. You would have to take all the costs. Some man might sell a grade of ore within 24 hours after it came in, and another man might not sell it until the ore had been in the storehouse for 6 or 8 months. The user has always got to pay the charges, the same as in everything else. Then again, one ore man might want one kind of ore that has cost us more money than another ore. We regulate our price on the purchase price and cost to ourselves. In one case it might cost me, my grinding, $10 a ton, and in another case it might cost $15 a ton to grind my ore and get it in shape; barrels might cost $1 apiece or $2 apiece—they have gone up very rapidly lately. You have to regulate your prices a great deal on conditions, and usually you would get a higher price from a man using small quantities than a man using large quantities, and your expenses are not so high.

Senator JONES of New Mexico. What other general regulation could be made fixing the cost, or determining what an unreasonable profit in your line of business would be?

Mr. LAMSON. Well, I suppose it could be done; it would be very hard, though. It is pretty hard to adjust expenses and to tell what the actual cost is. For example, just in my small line of business: I have had to practically double my expenses within the past year—almost double them—on account of the amount of detail work and tracing of cars, getting licenses, and all those miscellaneous things enter into it a great deal.

Senator JONES of New Mexico. You stated yesterday that you were purchasing ores of a similar grade at all the way from $90 a ton up to $120 a ton?

Mr. LAMSON. Yes, sir. We have paid as high as $180 a ton.

Senator JONES of New Mexico. Now, do you adjust your profits on each lot bought, or how do you figure that?

Mr. LAMSON. Generally on the lot bought. As I have said, one man orders 10 tons of material and he would not have to pay as high a price as a man ordering two barrels because those two barrels may have been in the storehouse for months, and the charges all go against it and the profit be figured at a selling price that we thought was reasonable, with the charges all added to it. The shipment might come in and we might sell it right off the dock and make a great deal better price, right off the docks because we would not have to handle it.

Senator JONES of New Mexico. As a practical proposition, if I had authority to say that you should not make an unreasonable profit in

your business as you are conducting it, what sort of regulation could I promulgate which would control you and limit your action to a reasonable profit?

Mr. LAMSON. It would be an awful hard thing to do. As I say there are so many things that enter into it. If business was going on the same as it was two or three years ago, before there were delays in freights and tying up of your money, it would be entirely different. There is another thing. Many times you have to pay for goods long before you get them, and then take into consideration the tying up of money. I have goods in Mississippi now that were shipped to me last November. Those goods were paid for back in January, and we have not received them yet. It may be three months yet before we receive those goods, and my money is tied up in the meantime. Of course the fellow who purchases has got to pay for those charges; if not, I am doing business at a loss.

Senator JONES of New Mexico. Have you resold those identical ores?

Mr. LAMSON. Resold which identical ores?

Senator JONES of New Mexico. The ones which you say you purchased in January, or paid for in January; are they sold now, or resold?

Mr. LAMSON. No, sir; they are not sold.

Senator JONES of New Mexico. You are simply buying to replenish your stock?

Mr. LAMSON. Yes, sir. We have to keep goods on the way all the time.

Senator JONES of New Mexico. You take your chances on the price of the market at the time you are ready for delivery?

Mr. LAMSON. Absolutely. If I should buy 500 tons of ore and pay $100 to-day, at the market price, and some one else is competing against me, and the market price is $90 a ton, when those goods arrive, if I am going to get out at all, I have to take my loss and sell them unless I am fortunate enough to find some one who wants it at the higher price.

Senator JONES of New Mexico. On what basis do you fix your price to your customers now?

Mr. LAMSON. I endeavor to figure in the charges and then leave a slight leaway, and figure what is a fair price to charge them. We have no percentage basis to work on.

Senator JONES of New Mexico. You have no percentage basis?

Mr. LAMSON. No, sir.

Senator JONES of New Mexico. It would occur to you that it would be rather difficult for you to do so?

Mr. LAMSON. It would be very difficult. We make a little more money out of one trade than out of the other.

Senator JONES of New Mexico. And I suppose your price to small consumers is usually larger than to large consumers?

Mr. LAMSON. It is; yes, sir. The small consumer naturally always has to pay more because there are more charges in making small shipments.

Senator JONES of New Mexico. Then, as a matter of fact, practically in your business to-day you are charging for the ores about what you think the trade will stand?

Mr. LAMSON. Not always. Sometimes, yes.

Senator JONES of New Mexico. But resting on your judgment as to the amount of profit which you think you ought to make?

Mr. LAMSON. Yes, sir. For instance, here is a little instance—I think I spoke of this yesterday. We have had a lot of stuff stored in different warehouses. The Government has taken over the warehouses. We have had to move all those goods, and they are bulky goods. We have been hunting around for two or three months to find a place where we could get storage facilities, and we have had to rehandle those goods three or four times, and now we have had to rent a place where we could take those goods and store them until we are ready for shipment. Sometimes we have to hold goods for six months and sometimes a year before we ship them.

Senator JONES of New Mexico. Now, during the last year, has there been a time when you have had to take a loss on any of your purchases by reason of competition in price?

Mr. LAMSON. Well, I can not exactly say that; no, sir. I can say that we have bought lots of goods that have been represented to us as high-grade goods which turned out to be very poor, and I have taken back lots of them, time and time again. Those are the chances that we have to take. So we have to get a good margin on our goods. I took a loss of $2,800 the other day on one small shipment because the goods were represented as 88 per cent, and instead of that they turned out to be 69 per cent.

Senator JONES of New Mexico. Of course, in that case you have a claim for refund, have you not?

Mr. LAMSON. No, sir; absolutely not. I have to take my chances on those. That is why you have to make a profit of all you can.

Senator JONES of New Mexico. I thought you said you purchased the goods on a representation?

Mr. LAMSON. They were supposed to be. I had a chemist analyze the goods that I purchased, but whether it was done through some flimflam I do not know.

Senator JONES of New Mexico. Whose fault was it, the chemist's whom you consulted?

Mr. LAMSON. Oh, I can not tell you; I really do not know. We had the chemist to analyze it and had three chemists analyze it afterwards, and it turned out to be 69 per cent instead of 80 per cent, for which we paid in the first place.

Senator JONES of New Mexico. It strikes me that it might pay you to have chemists of your own.

Mr. LAMSON. We have a chemist who does all of our work for us; he checks up. I have no redress because I had the original chemists analyze the ore. But I can not treat my customer that way. I have had customers on our books who have been there over 50 years.

Senator JONES of New Mexico. That loss was occasioned solely by the fact that you did not sufficiently investigate the ore before you bought it?

Mr. LAMSON. No, sir; we did everything we could possibly do to safeguard ourselves. We purchased the ore and paid cash for it, and got our analysis, and when it was shipped out to our customer the customer complained and said it was not up to standard. We do not do business that way.

Senator JONES of New Mexico. But you did make the attempt to find out the quality of the ore before you bought it?

Mr. LAMSON. Yes, sir; but you can get fooled on manganese ore, because no two chemists will make manganese ore the same; they will vary a point or two points.

Senator JONES of New Mexico. But to vary 20 points; that is not usually necessary.

Mr. LAMSON. It was a very unusual shipment, and for the size of the shipment it was a very heavy loss. If I were regulated in my prices I would have no chance to make that loss back at all.

Senator JONES of New Mexico. Not on that shipment.

Mr. LAMSON. It would take a good many shipments to make up that difference. If you are doing business for a profit, you have to take into consideration all those things, especially in these times. I just had a shipment come in the other day that I have been waiting for; it has been on the way from Mina, Ark., for nearly 10 weeks, I think, and it is absolutely worthless.

Senator JONES of New Mexico. Now, that presents an interesting phase of just what I was trying to get at. In such cases, of course, you have got to sell your other ores for a profit sufficient to make up that loss?

Mr. LAMSON. Yes, sir.

Senator JONES of New Mexico. Now, how much of a percentage—or could you adjust it on a percentage basis, the amount which should be allowed for such uncertainties in the business?

Mr. LAMSON. No, sir; I do not think it is possible to, because one minute I might sell a hundred tons, possibly. If I could regulate the exact quantity of ore that we were going to sell, we could, but we can not do that. The demand may be very heavy one minute and very light the next minute. I had a lot of ore in storage when I went out on the road on a business trip, and while on the road my office wired me not to sell any ore because it was all gone.

Senator JONES of New Mexico. Now, come back to the main point. How could you fixe the price, through the licensing feature or otherwise, for the amount of ore in which you are dealing?

Mr. LAMSON. I can not see how you could with any justice to the people handling the ore. I will say——

Senator SHAFROTH. Could you not do it in this way: Could you not by providing an excess war profit, and then if the man had to ship his ore 40 miles to a train and compete with a man who is right on the railroad, the one who made no profit whatever could not afford to sell for the price that the other man could, or if he did his profits would be insignificant, and at the same time the other man would make a large profit perhaps.

Mr. LAMSON. I really can not see how that matter can be adjusted. The conditions at the present time are entirely different from what they would be in normal times. If you should ask me the same question as you have in normal times, I should say there was a possibility of doing it, but there are so many factors that enter into it that it is almost impossible. I do not see how it could be done with any justice to the men handling the manganese ores.

Senator JONES of New Mexico. Why is it? What caused this present condition? Why is it more difficult to regulate these prices now

than in the normal times? Is it because of the unlimited demand or because of the necessity for developing new mines, or what is the reason?

Mr. LAMSON. It is the unprecedented conditions in which we are working.

Senator JONES of New Mexico. In what respect?

Mr. LAMSON. Well, there is one instance that I just gave you—when you are purchasing ore lots of times it is like buying a pig in a bag; you do not know what you are getting. Those things have to be taken into consideration.

Senator JONES of New Mexico. Does not that obtain in normal times?

Mr. LAMSON. No, sir; it does not. When we were getting our Caucasian ore we knew what that ore was going to test. Our storage charges were always the same. We did not have to wait five or six months to get the goods. The present conditions are absolutely unprecedented, and I do not see how you could under present conditions fix a price.

Senator JONES of New Mexico. You have to stabilize prices in handling that class of ore?

Mr. LAMSON. Yes, sir.

The CHAIRMAN. In that case you went into a known field?

Mr. LAMSON. Absolutely; yes, sir.

The CHAIRMAN. And now you are going into an unknown field?

Mr. LAMSON. It is a gambler's chance you are taking. I am taking a gambler's chance with every lot of ore I am purchasing. I am purchasing ore now from Cuba, and we are purchasing under a guaranty that it will test so much. We have had several shipments coming in under that contract that have tested much lower than we have purchased the ore for, and yet rather than upset our arrangements we have paid the price where we should under the contract have had a higher grade of ore and have been able to work it off.

There is another point to bring up. As to low-grade ore we might mix a very much more expensive ore with it to bring it up in M/N. O–2, to the point we want it.

Senator JONES of New Mexico. And in this instance you expect to make the gambler's profit, do you not?

Mr. LAMSON. No, sir; I can not say that. We would like to. You would have been able to make the gambler's profit in 1914 and 1915, but you can not make it to-day. You can make a good profit, but not an excessive profit to-day, because there is too much competition in manganese.

Senator JONES of New Mexico. Where a man is taking such chances as you have detailed, is he not entitled to make a greater profit, if he can?

Mr. LAMSON. I suppose he is, if he can get it. You could have gotten it in 1914 and 1915, but you can not to-day; there is too much competition; there are too many people who are engaged in the business who are perfectly willing—it may be a side line with them and not a main business—they may be perfectly willing to take a dollar a ton and cut some one else out and get their business. That is what you have to combat against all the time. There are a great many firms that went into the manganese business after the war be-

gan—a year after the war began—who really do not belong in it, and should not be in the manganese business, but they are.

The CHAIRMAN. That is due to high prices.

Mr. LAMSON. That was due to the gambler's chance. They saw a chance of making a lot of money, and I guess a good many of them did make money out of manganese ore, but it is not bringing the tremendous price that it did a year or two ago. May I ask a question?

Senator JONES of New Mexico. Certainly.

Mr. LAMSON. What would you think would be a fair price, if you were investing $130 a ton for ore—what do you think would be a fair margin of profit on it?

Senator JONES of New Mexico. I should not know. I would have to know the gambler's chance involved in the transaction.

Mr. LAMSON. It is an awfully hard thing to regulate the price on this article that costs me say $130 a ton and have to sell it at a great deal less margin of profit than on the $150 a ton, because I am taking so much more chance on that $150 a ton.

Senator JONES of New Mexico. I think that is perfectly natural.

Mr. LAMSON. So it is awfully hard, as I say. Here it a lot of ore that did not cost me very much, but it cost me about $1,000 to get a little shipment of Canadian ore in. I gave instructions to dump it just before I left New York. There is $1,000 out.

Senator SHAFROTH. What do you mean by dumping it?

Mr. LAMSON. Throwing it away.

Senator JONES of New Mexico. I think it is a line of business that you expect a profit in proportion to the risk involved. Take a person engaged in the banking business, where money is loaned on good security, and all that sort of thing. He expects very much less profit than a man engaged in a more hazardous line of business. It strikes me that your line of business is quite hazardous, from what you have said.

Mr. LAMSON. It is unless the man understands his business.

Senator JONES of New Mexico. And what per cent of profit on the capital involved in your business, do you think, would be a reasonable profit?

Mr. LAMSON. I should have to give that more careful thought than I have as yet. Different circumstances are arising all the time. If you tell me what my losses are going to be this year, I can tell you. I do not know what my losses are going to be this year. I know of about four or five thousand within the past two months.

Senator JONES of New Mexico. Have you a large capital invested in your business, or do you handle your ores from time to time as an independent transaction?

Mr. LAMSON. Oh, no, sir; we have contracts for hundreds of tons. I suppose we have $150,000 invested in our business all the time—from $150,000 to perhaps $200,000.

Senator Jones of New Mexico. But the capital invested is comparatively small in proportion to the volume of business. You are turning your capital over rather rapidly, I judge.

Mr. LAMSON. Yes, sir; we do not let it lie idle if it is possible to keep it going. And then again a person is handicapped to-day, because where you could turn over a great deal larger volume of business—that is a larger tonnage—years ago, to turn over the same ton-

nage to-day would take five times the capital. A man has got to have a great deal more money invested in his business to-day than formerly.

Senator JONES of New Mexico. Now, taking up the producing end, would it be practicable to fix a uniform price for the producer?

Mr. LAMSON. Well, I may be interested in a small way in a few properties, but I do not think really that I am the one to ask that question of. As to the producer, from my standpoint, I should say no.

Senator SHAFROTH. Now tell us why.

Mr. LAMSON. I have tried to explain that. It may cost one man a great deal more to produce his goods than another. Take, for instance, the Phelps & Dodge Co., the copper people; they are equipped; they have capital to go ahead in a large way. For nearly two years we have had part of their ore. I understand they are getting it out in a large way. They have their railroad facilities right to their mines. They can mine and put ore on the cars at one-half the price that a small man can, who has to cart it 25 or 30 miles. There are some of those mines that are away off the railroad.

Senator SHAFROTH. Then what would be a fair profit to them would be an absolute prohibition for the other man to produce at all, would it?

Mr. LAMSON. Yes, sir; absolutely. I am not interested from the producing end. I would say let them make all they can out of it within reason, because the big fellows are going to make as much as they can anyway, and it is simply going to curtail a whole lot of fellows in going into the mining business that would, if they can not see a profit in it. If they could see a good profit in it they would go ahead and start mining.

Then there is another thing that is very important to me anyway. There are a good many lands that have deposits. They would not want to open up those deposits and invest money in the proposition and feel that they were on a volcano all the time. If the ore is to come in here from different competitive countries, they are simply going to be knocked out and their investments thrown away. I have heard man after man say "We have got to make money while the war lasts because if we do not our mine has got to shut down after the war is over." That is not conducive to a fellow to open up properties.

Senator JONES of New Mexico. Now, take an instance where a man has a property which we will say we won't open up, and we admit that it is necessary for him to amortize the expense of that during the war, or in other words, to make a profit during the war sufficient to refund the amount of money which he has got to invest. How can you in such case as that determine the amount of money necessary to be allowed for amortization and provide for its repayment during the war through the price upon the amount of ore which he may obtain from the mine?

Mr. LAMSON. If I had the handling of a proposition of those mines and a man had a manganese deposit that he wanted to open up—there are lots of them that have not the money to open up and invest in it—I would arrange it so there would be some board—I will have to tell you this in my own way—I would arrange it so that there would be some board where that man could get easy audience and have him state his case, and his idea of what he has got. Then if

the board considers that it is worth looking into, send an engineer there, a Government engineer, and let him go over the property and give his opinion about it. I would not send a gold engineer, a man familiar with gold mines or copper mines, but would send a man, an engineer who was familiar with manganese—and they are very few and scarce, because there are few engineers who know very much about manganese properties. Then help the man out.

Senator JONES of New Mexico. Now, what do you think of this suggestion, that instead of trying to regulate those things by price-fixing system, whether through license or otherwise, could not the same object be accomplished by the Government providing an expert geologist, a scientific man, to examine the property and give his opinion?

Mr. LAMSON. No, sir; I do not think that could be done.

Senator JONES of New Mexico. Why?

Mr. LAMSON. Well, because I have never believed in that. I believe in the practical end instead of the theoretical end. A great many geologists have their theories and a great many of those theories have turned out wrong. I do not mean to put my knowledge up against any geologist in the country; I do not mean that. I am referring to the practical knowledge of manganese deposits.

Senator JONES of New Mexico. Perhaps you did not quite catch my point. I did not mean to confine that information to what would generally be termed a theoretical geologist, but if the Government could send a practical manganese-mining engineer?

Mr. LAMSON. That is what I had in mind. Yes; I should say so.

Senator JONES of New Mexica. That is what I referred to when I used the term geologist. In other words furnish a competent man to examine the property and give information.

Mr. LAMSON. I think that would be an awfully good thing for them to do.

Senator JONES of New Mexico. If that could be done at the present time would that stimulate the production of manganese to a sufficient extent?

Mr. LAMSON. Do you mean to give those fellows who own this property any help or to make them put up money, because there are lots of them who have not the money to put up?

Senator JONES of New Mexico. If the Government had a practical engineer, we will call him, instead of geologist, to make a report upon that property, and if that were favorable, would not the owner of the property be able to finance his own deals?

Mr. LAMSON. Lots of them can not; a great many of them do not know how, because a great many of the people owning these properties are not men who come in contact with people who have capital. Now, if the Government would go a little bit farther and say that it would help them; I think the Canadian Government, for instance, in developing property will pay the expense in sinking the shaft, or something of that kind, and the money will come back to the Government afterwards. It seems to me if the Government has confidence enough in the engineer that they have sent to examine that property, the Government ought to have confidence enough to finance the thing until it is on its feet, if they want the protection of the ore, and I think if they did that it would be a very good thing.

That would be under Government supervision, if necessary.

Senator JONES of New Mexico. As I understand your position, you think it is impracticable, if not unwise, to fix a uniform price?

Mr. LAMSON. Absolutely so.

Senator JONES of New Mexico. When you get away from the uniform price, how can you handle it otherwise than by the Government practically taking control of the individual mine.

Mr. LAMSON. I do not know that you can. I do not see really how you can.

Senator JONES of New Mexico. Then, how would this scheme do: To have the Government take up the cost of production in each given mine and specify the price which that property ought to receive, and the Government buy it and practically buy all of the ore that is offered and prohibit the sale of any ore by anyone except to the Government, and then the Government take the average of cost and at that price furnish it to the consumer?

Mr. LAMSON. I do not see why that could not be done. Then the only thing is that the Government is taking the business men away from lots of concerns, and then there are going to be less concerns to get the excess profits out of.

Senator JONES of New Mexico. We get them in the first instance and would not be bothered about excess profits.

Mr. LAMSON. No; but it would be a question of putting a lot of men out of business. I do not think that is the idea of the Government—to put men out of business.

Senator JONES of New Mexico. We do not want to if we can avoid it.

Mr. LAMSON. We have had a great deal of difficulty in getting ore during the last year. We got less ore last year. I think there was something between six and seven hundred thousand tons of manganese used last year.

Dr. MANNING. Six hundred and ten thousand.

Senator SHAFROTH. I think one of the objects of this legislation is to save the tonnage from Brazil in bringing the ore in where by developing it in our own country we would save an immense amount of tonnage on the sea, a tonnage that has grown up and is making it very scarce.

Mr. LAMSON. You see they really have taken up operation in a large way in Cuba now, and I think you will find a great deal of ore coming in from Cuba. I think it is all right to stop the importation of that after we are dead sure of a supply here, but until we are we do not want to cut off our supply.

Senator JONES of New Mexico. That is conceded by everyone, I imagine.

Mr. LAMSON. Yes. As I said before, I was at that meeting and they said they were going to curtail it to 300 tons that came from Brazil last year and produce that much in the United States, but at that meeting there were a number of mine owners who gave figures that I would have questioned very much. The reason of that is a great many of those fellows claim that they have hundreds of thousands of tons or ore, and when you really get down to hardpan they have nothing at all to speak of. Here is this fellow out in Arkansas who wrote me and told me he had a mountain up there of

manganese, enough to keep the steel trade going. After fooling and fiddling around we just ordered a 10-ton sample last August. Now there are many people who think the same way, but there are very few mining engineers who are familiar with manganese. Until the war started manganese was a product that very few people knew anything about. When you ask men to-day about manganese naturally they are very much better posted than they were three or four years ago. But take it three or four years ago when there were lots of people who did not know what manganese was—even business men did not know—because outside of the steel trade they were getting all they wanted, and outside of the steel trade it was a specialty.

The CHAIRMAN. Mr. Lamson, you spoke of a shipment of manganese ore from Arkansas a little while ago.

Mr. LAMSON. Yes, sir.

The CHAIRMAN. You stated you were some months in receiving the shipment.

Mr. LAMSON. I think we were about 10 weeks; I think it was that time on the way. I was speaking about other ore than manganese; I was simply speaking of the shipping facilities. That happened to be gilsonite, or asphaltum.

The CHAIRMAN. And the delay in the receipt of that was due to transportation and not to production of it at the mine?

Mr. LAMSON. No, sir; that was on account of the railroads.

Senator JONES of New Mexico. Do you handle other ores besides manganese.

Mr. LAMSON. Yes, sir; we handle asphaltum.

Senator JONES of New Mexico. You do?

Mr. LAMSON. Yes, sir.

Senator JONES of New Mexico. Is that in this bill?

Mr. LAMSON. No, sir; asphaltum is not. I do not think that would be classified as an ore. I saw the authorities about that yesterday. They asked me to come down and see them with reference to gilsonite, which is found in Colorado and Utah. I do not think there is any chance of there being a scarcity in asphaltum. These are minerals and ores in this bill. Asphaltum is not in the bill at all. There has never been a scarcity of asphaltum.

Senator JONES of New Mexico. Do we not import a good deal of asphalt?

Mr. LAMSON. The Barbour Asphalt Co. own a lake in Trinidad, but the American asphaltum can be used just as well as that in the lake for paving purposes, because the residuum of ore from California and Texas and Mexico gives as fine a paving asphalt as there is in the world.

Senator SHAFROTH. As good as that which comes from Lake Trinidad?

Mr. LAMSON. Yes, sir; and they are using a great deal more in California of the oil residuum to-day. They take the oil and put it through a certain process and the residuum is asphalt. That is 99 per cent bitumen, as against 34 per cent on the Trinidad Lake. They have to refine that and then they only get it about 74 per cent, whereas the Colorado gilsonite is absolutely pure as it comes from the ground. That asphaltum goes very largely into paving.

Senator SHAFROTH. I would like to ask you a question. The object of this bill, as I understand it, is to encourage the production of these metals that are named in this bill?

Mr. LAMSON. Yes, sir.

Senator SHAFROTH. And the next purpose of the bill is to so regulate the selling price that exorbitant profits will not be made, and to both of those propositions, I presume, everybody assents and desires that result to happen. Now, what do you think of the first proposition of encouraging the production of these ores, as to what steps ought to be taken?

Mr. LAMSON. Well, I just went over that. I think if there was a committee appointed to look into these properties and trace them down, and then have an engineer make a report, and if the report was satisfactory the Government could finance it up to a certain point so that those fellows could produce their ore, it would be a very good arrangement. There are a great many of those deposits that could be opened up if the people had the finances to do it, but there are very many private individuals who have got more things than they can meet to-day. I had a man tell me the other day—a man who is worth a great many millions—he said "Lamson, I am right up against it. With the income tax and the rest of these things and the enormous amount of money we have tied up in copper, we have not the money to go into anything else."

Senator SHAFROTH. What do you think of the practicability of the Government guaranteeing a price as a minimum price?

Mr. LAMSON. I think that would be an incentive to a certain extent.

Senator SHAFROTH. That would eliminate the personal inspection of each mine, would it not?

Mr. LAMSON. Yes, sir. That would be a good thing for the Government and a poor thing for the fellow who is producing, because lots of them think they have it when they have not got it.

Senator SHAFROTH. But suppose a minimum price is guaranteed?

Mr. LAMSON. It would be an incentive to the men in this way, because a fellow having a manganese deposit could then go to a private individual and say, "I have actually sold at such a price all the ore I can turn out. I need $50,000. Will you put in $50,000 and let me go ahead and develop this property?"

Senator JONES of New Mexico. What price do you think would be a fair guarantee now?

Mr. LAMSON. For steel ore?

Senator JONES of New Mexico. For manganese ore that we have been talking about—the kind that you handle?

Mr. LAMSON. As to the kind I handle, under certain conditions I would be perfectly willing to pay $140 for a limited quantity, not too much, or $180 for some of it if I could get it. For the others I would not pay over $80 a ton. There, you will observe, is a tremendous range of figures. Customers who need it are willing to pay a very much higher price for certain qualities of ore if they could get it, but I can not get it.

Senator JONES of New Mexico. What price would it be proper for the Government to guarantee, say for a two years' period, to any fellow who would open up a new mine?

Mr. LAMSON. Well, you would have to put it on some percentage basis. A fellow might come along with 20 per cent ore and another

fellow 40 per cent ore. Of course, you can not pay the same price for 20 per cent ore as you do for 40 per cent ore. You would have to have the scale regulated, and it is regulated to-day by the steel trade. I think it is worth $1 to $1.20 a unit.

Senator JONES of New Mexico. I understood that that was so.

Mr. LAMSON. I should think those figures are far above any figures that they formerly used to get, and I think it is perfectly safe for a year at least, or two years, because if the war should stop to-day it would be 12 months before any kind of supply of ore would come in from any foreign countries, to speak of, and even longer than that. I do not see how they can get any ore in to speak of in any quantity inside of from 12 to 18 months, any more than they are now, except from Brazil.

Senator JONES of New Mexico. You seem to have some difficulty in suggesting the price which you would fix on these ores, either upon the unit basis or otherwise. Do you think that a tariff upon the importation of ores would answer the same purpose?

Mr. LAMSON. A tariff?

Senator JONES of New Mexico. Yes.

Mr. LAMSON. Do you mean after the war?

Senator JONES of New Mexico. Now and after the war, for a period of time?

Mr. LAMSON. No, sir; because we have not the stuff here; we have to get it somewhere else. If we could produce it in this country, I think everybody would be only too glad to get it, and save the additional cost of getting it from other countries. Again, just as soon as the United States is producing, and producing the right kind and quality of ore, I would much rather buy here than in Cuba or Brazil or anywhere else.

Senator JONES of New Mexico. Then as a guaranty against foreign competition, in the event of the early cessation of the war, would a tariff put upon these ores answer the purpose?

Mr. LAMSON. I should say it would; yes, sir.

Senator JONES of New Mexico. And if we were to do that, would it be necessary to go further in order to develop the domestic supply?

Mr. LAMSON. No, sir; I do not think it would.

The CHAIRMAN. Are you speaking of after the war?

Mr. LAMSON. I am speaking of after the war now. As far as a tariff is concerned to protect home industries and moneys invested, I think it is going to be the same thing with many other industries. Take, for example, the dye trade. What are they going to do if they let dyes come in after the war with the millions that have been spent here?

Senator SHAFROTH. You speak of a percentage basis on manganese ore. Is the ratio practically the same in all ores—that is, take a unit of 1 per cent, would the ore of 90 per cent be worth 90 times as much?

Mr. LAMSON. Oh, no; not in that ratio.

Senator SHAFROTH. There is a certain grade upward, but not to the extent of a multiple of 1 unit by 90?

Mr. LAMSON. Oh, no. As an illustration, take, for instance, if a man should come into my office and say, "Mr. Lamson, I have a hundred tons of ore that tests 80 per cent $MnO_2$, with less than 1

per cent of iron and no copper, what will you pay me for it?" I would offer him, right off the reel, $90 a ton, and would be perfectly willing to pay him up to $110 if I had to.

Senator SHAFROTH. Suppose a man came in with 15 per cent ore?

Mr. LAMSON. I would say I did not want it under any conditions.

Senator SHAFROTH. Say 45 per cent?

Mr. LAMSON. I would not want it.

Senator SHAFROTH. Well, somebody would want it?

Mr. LAMSON. Yes; the other fellow, handling a different class of trade.

Senator SHAFROTH. Would the 90 per cent ore be worth twice as much as the 45 per cent ore?

Mr. LAMSON. Oh, yes, sir.

Senator SHAFROTH. More than that?

Mr. LAMSON. It might be for special purposes.

Senator SHAFROTH. Would it be worth six times as much as the 15 per cent ore?

Mr. LAMSON. Yes, sir; when you get down to 15 per cent ore, it would.

Senator SHAFROTH. Then, you would have to have this graduation not according to the multiples of per cent but according to some kind of scale that would vary as to that?

Mr. LAMSON. You would have to have it based on the unit of metallic manganese, just the same as the steel trade does at the present time, and up to a certain point. After an ore gets above 52 or 53 per cent metallic it is simply a question of what the ore will bring.

Senator SHAFROTH. That is, it is worth more?

Mr. LAMSON. It might jump very quickly. You are making up a special product. There is no 90 per cent ore in the market except 10 tons. It would be exactly the same as it would be at an auction. You might be perfectly willing to pay 30 cents a pound for that because you have to make a product where you can afford to pay that price. If another man wants that ore but can not afford to put it in his product at less than 10 cents, he could not go over 10 cents. As I have said, when it reaches that point it is a specialty.

Senator SHAFROTH. Now, in guaranteeing a price, say, for two years, how can you get a basis to guarantee it?

Mr. LAMSON. Well, it would be based on this: The Government would not want to buy all the ore that they could not dispose of. If you were going to get in 150,000 tons or 200,000 tons and store it up, it would take you a very long time to get rid of it. If it was very high-grade ore, an ore testing up to 48 per cent metallic, you could get rid of it at any minute to the steel trade or concerns making up ferromanganese.

Senator SHAFROTH. From what point to what point?

Mr. LAMSON. I should say up to 48 metallic.

Senator SHAFROTH. From 1 to 48?

Mr. LAMSON. No; I think around 15 to 17 per cent would be as low as even those people could use.

Senator SHAFROTH. What could you say as to guaranteeing the price on or between 15 and 50 per cent?

Mr. LAMSON. I should say you would have to ask some one better posted on steel than I am. I would not attempt to say because I do

not handle that ore, and I am not familiar enough with it. It would really be guesswork on my part.

Senator SHAFROTH. What do you think of the question of letting supply and demand control the price that ore can be sold for, and making it so that any excess profits are made to be brought back by the war tax?

Mr. LAMSON. That is what they are doing at the present time.

Senator SHAFROTH. They are doing that now?

Mr. LAMSON. Yes; I think on the high-grade ores I do not see any other way to do it, because, take, for instance, to-day you might have a party that would be perfectly willing to pay 30 cents a pound for 92 per cent ore if he could get 5 tons. He would probably be willing to pay up to 2 cents per pound of what it was going to sell at.

Senator SHAFROTH. I mean a war tax on the profits of each year of the company that sells this ore.

Mr. LAMSON. That is what they are doing now. I think that is the only way to do, because there is too much variation in the prices to-day that you have got to pay for it. I would offer for this ore in Nova Scotia 8 to 10 cents a pound if they were only going to get 5 tons; if they were getting out 1,000 tons, I would not offer over 6 cents. I would have an outlet for a comparatively small quantity, somebody that wanted it specially and was willing to pay a high price. If I could get more than I need, it would be a drug on the market to me.

The CHAIRMAN. Do you think a scale of prices could be provided for in a bill that would be just to all producers?

Mr. LAMSON. On all up to 48 per cent metallic; yes; over that, I do not.

The CHAIRMAN. Would it not have to be left largely to the board or the person that would administer the law in certain cases as to what guaranty should be given?

Mr. LAMSON. On a question of that kind I should get a man thoroughly familiar with the steel business; he could aid you on those prices a great deal better than I.

The CHAIRMAN. The demand and quantity of the ore would control and the impurities in it?

Mr. LAMSON. As I understand it iron contents do not injure it at all, as a matter of fact; Speigel iron or ferromanganese, either one; I do not think iron contents affect it; I am not positive about that.

The CHAIRMAN. Take the instance you mentioned a little while ago where one producer is on a railroad and the other is 25 or 30 miles away, the same scale would not apply to those two men, would it?

Mr. LAMSON. No; it might not.

The CHAIRMAN. The man 25 or 30 miles away would be at much greater expense in getting his ores shipped or getting it to the shipping point than the man right at the shipping point?

Mr. LAMSON. Absolutely so.

The CHAIRMAN. Therefore that would have to be left largely to the person who administers the law to decide what would be fair between the two parties?

Mr. LAMSON. Yes. Take, for instance, a concern I know of which has leased a property down at Woodstock, Va. Those men down

there will spend about $100,000 before they get a ton of ore worth anything and without knowing whether they are going to get anything out of it.

The CHAIRMAN. I think that is all unless you have something else.

Mr. LAMSON. No; I have nothing.

## STATEMENT OF DR. VAN. H. MANNING, DIRECTOR OF THE BUREAU OF MINES, DEPARTMENT OF THE INTERIOR, WASHINGTON, D. C.

The CHAIRMAN. You testified before the House committee when this bill was under consideration before that committee, did you not?

Dr. MANNING. Yes, sir.

The CHAIRMAN. That has been reduced to writing, and your statement made at that time is in the hearing?

Dr. MANNING. Yes.

The CHAIRMAN. Have you something along another line, different from the statement you made before that committee?

Dr. MANNING. I should like to discuss with the committee, Mr. Chairman, some of the features that were eliminated from the Foster bill. There are some amendments I want to suggest in connection with the bill if you are ready to take it up and discuss that feature of it.

The CHAIRMAN. Very well.

Dr. MANNING. There are some of these other gentlemen here. I can wait until a later time.

Senator SHAFROTH. Is there anybody who wants to be heard now?

Dr. MANNING. I see Mr. Wells, of the Bureau of Mines, connected with the War Department, the Shipping Board, and the War Trade Board on the sulphuric-acid situation, which is very acute, and he has got to go to New York to-night to meet some of the War Department people to-morrow.

The CHAIRMAN. We should like to hear from him now.

## STATEMENT OF MR. ARTHUR E. WELLS, UNITED STATES BUREAU OF MINES, SALT LAKE CITY.

The CHAIRMAN. What is your residence?

Mr. WELLS. Salt Lake City.

The CHAIRMAN. Are you connected with any of the boards in Washington?

Mr. WELLS. I am with the United States Bureau of Mines, working with the War Industries Board and the War Department, a board that has a sulphuric-acid problem.

The CHAIRMAN. How long have you been connected with these departments?

Mr. WELLS. Since last October.

Senator JONES. In what business were you engaged prior to your coming to the board you have just mentioned?

Mr. WELLS. I have been with the Bureau of Mines since 1914; prior to that I was with the American Smelting & Refining Co.

Senator JONES. In what line of work with the Bureau of Mines?

Mr. WELLS. Metallurgist, especially on the smelter-smoke problem; and the last year, from July 1, 1916, until last fall. I was

superintendent of the Salt Lake station, the permanent station of the Bureau of Mines.

The CHAIRMAN. Will you state what the present condition is on sulphuric acid in this country?

Mr. WELLS. You appreciate the fact that in the last three or four years the sulphuric-acid production of the United States has more than doubled. In 1914 our production was, say, around 4,000,000 tons; this year the production is around 7,000,000 tons, and we are now making acid at a rate of around 8,000,000 tons per annum, and before the end of the year will be making acid at the rate of 9,000,000 tons. That acid production is absolutely necessary to meet the requirements of our explosives program without taking acid away from other industries. In fact, it is not quite adequate for the present explosives program, and we shall have to take some acid away the last of this year to meet the explosives program. I am referring to the explosives program as now outlined. We are now facing the further extension by some large explosives requirements, and we are working on the problem of providing a large increase to this 9,000,000 tons which I say will be required before the end of this year.

Senator SHAFROTH. What are the ingredients of sulphuric acid?

Mr. WELLS. Sulhpuric acid is formed primarily by burning sulphur or sulphur-bearing oils, taking the gases from the rusting furnaces. There are two processes, one the chamber process and the other the contact process. In the chamber process they are put through towers and lead chambers and sulphuric oxide, and from that is formed sulphuric acid; the other system is by contact with platinum——

Senator SHAFROTH. What are the principal ores bearing sulphur?

Mr. WELLS. Sulphur-bearing ores—we get some sulphuric acid from burning zinc ores or rusting or smelting copper ores, but the most of it is made from pyrite or brimstone.

I suppose these figures may not mean a great deal to you gentlemen, but I have been thinking in terms of figures so long, but it means we are continually facing, as long as our explosives program is being expanded, an increasing demand for sulphuric acid, and it is a big problem to provide this acid production, especially as we are faced with the fact that our raw material situation is getting more and more insistent. The shutting off of Spanish pyrites has put us back so far on our own resources that it is not only a great problem to provide any more acid, but it is a problem of getting raw materials from which to make the acid. If our acid production had remained even, had not been increasing, we would still have had quite a problem in providing the raw materials.

Senator STERLING. Has this increased production which you speak of since the beginning of the war been from ores produced in the United States?

Mr. WELLS. The increased production in 1914 and 1915 and the greater part of 1916 was brought about to a certain extent by Spanish ores and by an increase in our own domestic pyrites, a comparatively small increase, and by using more brimstone. I believe that before the war there was very little acid made from brimstone; not quite a large percentage is being made from brimstone.

Senator STERLING. Has there been any decrease in the amount we have received from Spain?

Mr. WELLS. Yes, sir. In 1917 we got in about two-thirds the amount we did in 1916, and this year the indications are that we will get in less than one-fourth of our 1917 importations, and in fact a ruling of the Shipping Board a few weeks ago brought down the importations to a point during the last of the summer which would be about one-tenth of the normal importation, and it is doubtful whether we are going to get even that amount in after——

Senator SHAFROTH. From what points did this increased amount of sulphuric acid come?

Mr. WELLS. The amounts of sulphuric acid? Mostly from plants that had been built here in the East.

Senator SHAFROTH. That is in the United States?

Mr. WELLS. Yes, sir.

Senator SHAFROTH. Where do you get the pyrites or the sulphur to make that sulphuric acid?

Mr. WELLS. You are referring to the pyrites in this country?

Senator SHAFROTH. Yes.

Mr. WELLS. And the sulphur. The brimstone has come principally from those two brimstone deposits in Texas and in Louisiana, the Union Sulphur Co. of Louisiana and the Freeport Sulphur Co. in Texas. The pyrite supplies come primarily from the Appalachian Mountain Range, the different deposits in Georgia and Virginia and also in New York State. Some small amounts from the Central States, and we have had some pyrites from California, making acid out on the Pacific coast.

Senator STERLING. Is the indication that there is ampl of that pyrite from sulphur and brimstone in the United States to produce any quantity?

Mr. WELLS. There is not ample. We are facing a very serious problem on the supply of raw materials for sulphuric acid. Even to maintain our present production there is no margin of safety whatever.

Senator SHAFROTH. These ores are upon private lands now, instead of public lands, are they, most of them?

Mr. WELLS. Yes, sir.

Senator SHAFROTH. I have been down to Louisiana recently and they told me there was any quantity of sulphur down there; veins, they said, 240 feet thick, etc.

Mr. WELLS. In places not now worked?

Senator SHAFROTH. No; they were just expressing the fact that there was such a vast quantity of it down there in Louisiana; but, of course, they were not expressions by engineers or anybody that had investigated the matter, but purely from hearsay.

Mr. WELLS. Yes.

Senator SHAFROTH. Do you know anything concerning the extent of those sulphur mines down there?

Mr. WELLS. I do not from first-hand information. I know through a report that was prepared last fall by a joint committee of the United States Geological Survey and the Bureau of Mines and the American Institute of Mining Engineers to investigate the properties now in operation, and my reply was based on that report.

Dr. MANNING. There are a million tons at Freeport, Tex., and Louisiana.

Senator SHAFROTH. Stored now?

Dr. MANNING. That was last November, and the same amount now, and the maximum production of the mines is about 3,500 tons per day.

Senator SHAFROTH. What is the extent of the deposits?

Dr. MANNING. The only other known large deposits down in that section of the country is down at Matagorda, which is not developed, and it will be 8 or 10 months before they could get machinery in to produce, and they figure on producing about 300 tons a day. There are some deposits in other parts of the United States, and my attention was called a few days ago to a deposit up in Wyoming; but that is remote from a railroad.

Mr. WELLS. I may say, in figuring our sulphuric-acid expansion we are figuring this new production in near Freeport. If that does not come in it makes the situation even more serious.

Senator SHAFROTH. What is your theory as to how this particular production should be encouraged; what are the means you think necessary to be provided for in order to do that in the United States?

Mr. WELLS. I have pictured the solution of the problem this way: That we have now some pretty definite information about the pyrite deposits in the United States and what must be done to get out any additional tonnage of ore from those deposits. We have not covered the whole field, but I think we have got enough to start now. Now, possibly it can be done in zones; possibly it will have to be done by taking individual deposits, determining what must be done with each deposit to bring out the maximum amount of pyrite, what must be done in the way of investment, what further investment must be required in the way of shafts to be sunk or drifting tunnels or shaft equipment, and what price must be paid to get that pyrite out and provisions made so that the mine owners can make their investment and can get the price which will bring out the pyrite. Now, at the present time the indications are that the price that must be paid for sulphur in pyrite is greater than the price which we are now paying for brimstone, and the acid manufacturers are not making contracts or are not really encouraging the pyrite producers to bring out the pyrite, because they are feeling that they are getting brimstone; they prefer to use brimstone rather than pyrite. What will have to be done is that acid plants that are equipped to burn pyrite shall be obliged to buy the pyrite to use it. And then you have the double problem, therefore, of determining what must be done to bring out the pyrite from the mine, and you have the problem of placing that pyrite at the acid plants and requiring them to use it. That may mean a pooling in order to handle it properly. I mean, you must take the whole situation right in hand and determine—say, we get pyrite from this plant at 30 cents a unit, from this plant at 27 cents, this man here can produce at 20 cents, this man for 25 cents a unit, while brimstone is coming in here at 22 cents a unit; have everything brought into a pooling system and then this matter allocated or sent to the different acid producers as they can use them at a price which will equalize the whole matter, the whole situation. That is

the way I fixed it in my mind as to what must be done to bring about more pyrites.

Senator SHAFROTH. Does that mean Government operation?

Mr. WELLS. No, sir; it does not mean Government operation; it means the actual operation shall be carried on by the present mine owers.

Seator SHAFROTH. That is a minimum price guaranteed?

Mr. WELLS. They will be assured that if they get out this much they will have a market for it at a certain price, and they will know just what they can do in the way of making their investments and going ahead on the work.

Senator SHAFROTH. Then how long would you have that guaranteed price?

Mr. WELLS. I believe it should be a matter of two years.

Senator SHAFROTH. Would that be a sufficient inducement to make the people open up new mines, do you think?

Mr. WELLS. Yes, sir; I do.

Senator SHAFROTH. Then there would have to be a minimum price fixed not by law, but by some authority?

Mr. WELLS. Yes, sir.

Senator SHAFROTH. Saying that, "For sulphur we will guarantee you so much per pound; for pyrite so much per pound," and you say they should be all added together and the plan results in an average price, or what?

Mr. WELLS. That is the way I picture it; yes, sir; because the sulphuric-acid industry, say, east of the Mississippi River, has got to be considered as a unit. We have got to keep every plant going to its maximum capacity, and whether the acid is going to explosives, whether it is going into steel, or whether it is going into fertilizers, and if we do not equalize the price then some manufacturer would be selling acid to the Government, the Government price for acid is fixed, the Government is buying acid on a fixed price, it has not been fixed, but they are only paying a certain price, and by agreement that is considered the Government's price for acid. Now if we do not do that, some manufacturers of acid will have to pay 20 cents per unit for their stuff, others will get it for 30 cents, and all we have to sell it for the same price.

Senator SHAFROTH. Do you not think the man who is selling it for 30 cents would object to going down to 20 cents, or would you be willing to pay him the 30 cents and put the matter in the average price which you afterwards fix?

Mr. WELLS. Put it in at 30 cents and determine that afterwards.

Senator SHAFROTH. How would you fix the maximum price, then?

Mr. WELLS. Well, that would be determined largely upon how far, to what extremities we go in the matter of raw materials. If our explosives program keeps on increasing and increasing, and the Army says, "We have got to have those ships and can not bring in Spanish pyrites," then we have absolutely got to get our raw materials in this country, then we may have to be willing to pay a very high price to get that sulphur out. It may be a matter of bringing in pyrites from the Pacific coast or from Utah or from Colorado back into this country, and that can not be done at a low figure; that will mean a high price for sulphur laid down in the East. But that

is something regardless of the price; we have got to have the material.

Senator SHAFROTH. When you go to making sales of this and on the question of how much they shall charge, can you have any fixed amount that you can specify, like, for instance, wheat at $2.20 a bushel; could you say that this sulphuric acid should sell for so much anywhere in the United States or at certain points in the United States; could you fix that for any definite period of time?

Mr. WELLS. I think that would be necessary.

Senator SHAFROTH. You think it would?

Mr. WELLS. Yes; you might fix ore; you might have acid in the Chicago district worth so much and acid in the New York district worth so much.

Senator SHAFROTH. Then that maximum price would be the thing that would control the man in developing a new property as to whether he would go into development or not, would it not?

Mr. WELLS. The maximum price and the time over which he could get that price.

Senator SHAFROTH. And you think it would be necessary for the United States Government to fix a certain price that would justify a reasonable profit and establish that price for a maximum price for two years the same as the other?

Mr. WELLS. Yes. May I cite an example?

Senator SHAFROTH. Yes; we should like to hear you.

Mr. WELLS. We have the problem right now of getting out pyrites from coal. There are probably several hundred thousand tons of pyrite that can be obtained from coal, material that is now being left underground, so-called coal brasses. Now, there has been in Washington in the last month a man who is ready to go ahead to make an investment to put a plant up to take these uncleaned coal brasses from a number of mines, clean them from coal content, and put them in shape to sell to a manufacturer. He figures that he has to have, say, 28 or 29 cents per unit of sulphur in his pyrite, finished product, in order to make any money at all on the project. Now, he goes out to the acid manufacturers and asks them to give him a contract for these other pyrites at a certain figure, and they say, "We are not interested in that figure. We are getting brimstone; we do not know how long; we do not know just what the conditions are going to be, but we will not contract with you for a year or even six months for your coal pyrite at that figure you say you have to have." Therefore, the man is discouraged; he does not go ahead and put up that plant. The coal brasses are made underground, and these acid manufacturers still continue to use brimstone, and we want those coal pyrites to come to the surface. We want them to be used. It is necessary they should be used. It is a very serious think to keep eating into our uncertain deposits in the South.

Senator SHAFROTH. Then, suppose that the man can not get the price that the Government fixes as a maximum price, who loses there, the man who produces the sulphuric acid or the Government?

Mr. WELLS. I do not quite understand the question. Are you referring to the pyrite or to the sulphuric acid?

Senator SHAFROTH. We will take sulphuric acid. If you are going to fix a minimum price, I could see how that could be done very well,

although we would get inequalities on account of mines having thicker veins and mines being located a long distance from railroads, and things of that kind, but I can see very easily that that probably can be worked out, but the question of the maximum price is the question where I stumble. I can not see how you are going to do it and how you are going to enforce that maximum price unless the Government agrees to buy at that maximum price.

Mr. WELLS. I believe that is what will have to be done. If the time comes where we will have to have pyrites from Colorado, and it will cost 40 cents a unit, say, to get those pyrites from Colorado back here in the East, and the average price for pyrites for brimstone, say, in the East, is 35 cents a unit, but there is enough of that to go around, then some means will have to be taken to get those pyrites back. Applying that to the coal brasses, by getting pyrites and sulphuric acid here in the East on the 25-cent unit, but there is not enough to go around, they will not make a contract, however, because of unsettled conditions, and they do not know what is going to break: they will not make a contract that will enable this man to go in and get out his coal brasses; then the Government has got to do it.

Senator SHAFROTH. What do you think of this, the Government fixing a minimum price; that is, a price upon which guarantees shall be made to the various persons and leaving the question of what it should sell for to supply a demand, regulated by a tax on excess profits?

Mr. WELLS. Along with that you would have to carry the power to allocate. The acid manufacturer would rather burn brimstone than pyrite, as a general rule; it is easier to burn, there is less expense in the operation. You may set the minimum price of 30 cents a unit on sulphur in pyrite, but as long as that acid manufacturer can draw on those brimstone deposits, say, at 22 cents per unit down there in Texas and Louisiana, why, he will not look at that pyrite; he will continue to draw on that brimstone.

Senator SHAFROTH. Because it is cheaper to him, I presume?

Mr. WELLS. Yes, sir.

Senator SHAFROTH. Is there any objection to drawing on the cheaper grade?

Mr. WELLS. Yes, sir; there is.

Senator SHAFROTH. What is that objection?

Mr. WELLS. Because that supply is not inexhaustible, and the length of life of those brimstone deposits is a very indefinite quantity. The hazards of mining—not the life hazards, but the hazards of length of life of those brimstone deposits down there—are great.

Senator SHAFROTH. Then there is involved in this question not only the question of price for any one thing that enters into it, but the element of trying to shift the demand on to something that is not now used?

Mr. WELLS. Yes, sir.

Senator SHAFROTH. And which is a little higher than the pure sulphur itself?

Mr. WELLS. Yes, sir; that is exactly it.

The CHAIRMAN. For the purpose of protecting those deposits of brimstone from becoming exhausted?

Mr. WELLS. Yes, sir.

Senator SHAFROTH. Are there not supposed to be great quantities of brimstone or sulphur in the United States?

Mr. WELLS. Those two deposits that are now working, and the one that is now being developed, are the only large deposits that we know of. There are some small deposits in western Texas, but the total amount you can expect from these other smaller deposits in the next two or three years would be negligible really in a big problem.

Senator SHAFROTH. How about in other countries?

Mr. WELLS. Japan has enormous deposits, and Japan has been supplying the Pacific coast until the last year or two.

Senator STERLING. Aside from your sulphur and brimstone deposits, are there not other sources of supply of sulphuric acid?

Mr. WELLS. We have the smelter smoke.

Senator STERLING. That is in connection with copper mining, largely?

Mr. WELLS. Yes, largely. Of course the zinc smelters in the Mississippi Valley are already making sulphuric acid at those plants, and we have just completed a survey of that district to determine where we can advantageously get more acid from the zinc plants, and the War Department is working on lines to get the plants in operation there now.

Senator STERLING. That is in connection with the zinc plants?

Mr. WELLS. Yes, sir.

Senator STERLING. How about the copper mines?

Mr. WELLS. They are in the West, they are in Montana or Utah. We have urged every effort be made to utilize smelter smoke—those waste gases from copper smelters in the West—as far as possible. We have even gone to the point of urging them to put some of their explosives plants out in that district to utilize the acid that can be made right on the ground, because the problem of making acid out there—there is no problem in making acid out there, but the problem is getting it back East where the demand is, and we have tried to bring the use of the acid right out there.

Senator STERLING. What do you say as to the quantity of sulphuric acid that can be produced in that way and the expense of producing it?

Mr. WELLS. At Anaconda, by the building of more roasters, you can not go to the smelter and put the plant right in connection with the smelting operations; you have got to build more roasters near the plant. You could make 3,000 tons a day, 2,500 tons of 60 brome and 78 per cent $H_2S$ sulphuric acid, or, if you made it by the contact system, expressed as 100 per cent acid, you would get somewhere around 1,800 tons a day.

Senator STERLING. So far as mere quantity, that would go a long way toward supplying the demand?

Mr. WELLS. That would go a long way. At Garfield, Utah, there is now under discussion a project of putting in a plant right on the plant at Garfield, and shipping the acids from there back in trainloads. We can do that at Garfield. We have ground area right adjacent to our roasting department sufficient to be able to make acid there. If they want to go beyond the quantities now under discussion, they would have to go out and build more roasters. But at

Garfield they could make 1,500 tons a day of acid. Those figures are approximate.

Senator STERLING. What steps have been taken toward utilizing those plants for the purpose of making sulphuric acid?

Mr. WELLS. There are two plants in operation; the Anaconda Co. is making 150 tons a day for their own purposes, and Garfield is doing the same, about 100 tons a day for their own purpose. And, as I say, we have had representatives of the Anaconda people here in Washington, representatives of the American Smelting & Refining Co. here in Washington, and meetings of the War Industries Board and the War Department to determine what could be done, and we have pointed out the advantage of putting picric acid or T. N. T. plants out there right on the ground, and we are now working on a proposition of making acid out there and bringing it back into Chicago in trainloads; but the number of tank cars involved for 3,000 tons per day production from Garfield, Utah, requires 250 tank cars to get it back into the Chicago district, and that means an investment, at the present time, of about $900,000 in tank cars alone.

Senator STERLING. The matter of transportation, then, is a serious problem?

Mr. WELLS. That is a serious problem; yes, sir.

The CHAIRMAN. Mr. Wells, Mr. Day would like to ask you a question.

Mr. DAY. There is one question I have in mind which has practically been covered by the inquiries of Senator Sterling, yet I would like to ask it in a little different form. You are aware, of course, Mr. Wells, in the course of your experience and discussions of the enormous quantities of sulphur daily being wasted in the United States through the operation of coal mines and reduction of copper, lead, and zinc ores, sufficient, if utilized, to supply all the necessities of the United States, are there not?

Mr. WELLS. I would not say that; no, sir.

Mr. DAY. Would you not say it is only a matter of cost?

Mr. WELLS. And the amount of acid that could be made at copper, lead, and zinc mines.

Mr. DAY. And coal mines also?

Mr. WELLS. As to coal mining, you refer to the coal brasses?

Mr. DAY. Yes.

Mr. WELLS. Estimates have been made as to the amount of pyrites that might be obtained from coal, and my impression is we could not look for a production of more than one-half million tons of coal pyrites under the most favorable conditions as to price and pressure put to bear on getting those out. I do not know any figure that has been accurately obtained as to the amount of pyrite that could be obtained from coal brasses at a 25, 30, or 35 cent price, but I would say, without making it a definite statement, that probably between 400,000 to 500,000 tons is the very maximum you could figure from coal pyrites. Now the zinc smelters, with the exception of one or two down in Oklahoma, I think we have exhausted the economic possibility of getting acid from zinc ores. We are taking steps in Wisconsin to do that, the Illinois field is covered, the Kansas plants are closing down, and the Oklahoma plants, of those one or two do offer some advantages, but the amount of acid we could make would be very small.

Mr. DAY. There are two very large plants in Pennsylvania?

Mr. WELLS. They are not making acid.

Mr. DAY. And as to the copper and lead smelters, we are wasting large quantities?

Mr. WELLS. Yes. Now at lead smelters the conditions are not favorable toward making acid. We would have to change the methods of operation quite considerably to make acid. It can be done, but it means an added cost to the regular operation, and unless some pressure is brought to bear it will never be done. At the copper plants there are these possibilities.

Senator SHAFROTH. Could you make a tabulation on each one of these items that is contained in this bill as to what in your judgment should be the price at which we should guarantee in the purchase of those materials?

Mr. WELLS. Of all the materials in that bill?

Senator SHAFROTH. Yes.

Mr. WELLS. No; I could not, because I have not studied all the materials that are listed in that bill.

Senator SHAFROTH. I suppose that some of the Bureau of Mines officials could figure this out as to one item and some one else as to another, dependent upon what he has made a specialty of?

Mr. WELLS. Yes, sir.

The CHAIRMAN. I might state, Senator, in that connection, that Dr. Manning later on will go into that question fully.

Senator SHAFROTH. Very well, then.

The CHAIRMAN. Mr. Wells, Mr. MacBeth would like to ask you a question.

Mr. MACBETH. What concerns are the greatest users of sulphuric acid?

Mr. WELLS. At the present time the explosives people use the greatest quantity.

Mr. MACBETH. I should like to have you designate the concerns specifically.

Mr. WELLS. The Du Ponts, Hercules, Atlas, Butterworth-Judson Smelter Process Co.

Mr. MACBETH. These concerns are immensely wealthly concerns, are they not, with tremendous amounts of capital invested?

Mr. WELLS. I guess some of them are.

Mr. MACBETH. Would you consider, Mr. Wells, any governmental agency acting possibly under one man, without a great amount of business experience and without any practical mining knowledge could handle the sulphuric-acid situation as well as these enormous and wealthy concerns could handle the situation through their ability to employ the best talent in the United States?

Mr. WELLS. If they directed their energies toward that.

Mr. MACBETH. The point is, Mr. Wells, why do they not? Why do they wait for the Government to take over this question for them? They handle other matters, every other chemical they desire in connection with their business, and why not the sulphuric-acid situation? Why do they come before the Government of the United States and say, "Here, we want you to obtain the sulphuric acid for us"? Why throw up their hands when they meet this condition, when they meet every other situation? If you can enlighten us, Mr. Wells, I should

like to get some light on that subject, because it has puzzled me for some time.

Mr. WELLS. You think they should go out and develop these pyrite deposits?

Mr. MACBETH. Why not?

Mr. WELLS. This is the situation. Most of the explosives manufacturers are equipped to burn brimstone, they are not interested in the pyrites. They could not use the pyrite if they had it, but we have got to save the brimstone for these explosives manufacturers so that they will be able to operate. The people who are interested primarily in the pyrites are not really—who are most dependent upon the pyrites, are the fertilizer interests.

Mr. MACBETH. It was stated in a paper not long ago that Mr. Du Pont headed an association of a few gentlemen of large means and that these people were to build a powder works for the Government at an expense of $75,000,000, for which they were only to charge $1,000,000 in profit. Do you mean to say that these men with this enormous amount of money can put into a powder factory and practically turn it over to the Government without any deposit, this large amount of money, and are not able to take over a few deposits and manufacture sulphuric acid, or go into the territory in which we have the sulphur deposits and investigate the sulphur deposits or buy them outright for their use? They are not infants to come before the Government and say, "Here, we can not do anything for ourselves; help us out."

Dr. MANNING. Is it not a fact that the Government is putting up this money? It is my understanding it is.

Mr. MACBETH. I do not know.

Dr. MANNING. That is a fact.

Mr. MACBETH. But they are superintending it, the Du Pont concern is superintending it. Could they not turn their attention to a few deposits of sulphur in the United States? You are aware, and every man who has ever read the reports by the United States is aware we have pyrites clear down from New York to Alabama, deposits all along the Appalachian Range which could be utilized. The point I wish to make is this: These gentlemen attend to everything else they handle in connection with their business, but for some reason I am not yet able to determine they come to the Government and say, "We want you to furnish us with sulphuric acid"—just as the Steel Trust comes to the Government and says, "Give us manganese." The Steel Trust attends to its coke and ore and everything else. Why not manganese?

Senator JONES. Without indicating any views on the subject, I was impressed in reading over the testimony which was taken before the House committee by this fact, that there were no witnesses before that committee from the class of people just referred to by Mr. MacBeth; I did not observe in those hearings that there were any consumers of any of these metals appearing before the committee demanding legislation upon these subjects. Now that may not indicate anything and yet it may, in view of what Mr. MacBeth has just said.

Mr. MACBETH. No; these gentlemen much prefer, Senator, just to have the Government take this matter over for them and wash their hands of it.

Mr. WELLS. Of course, they are not doing that with all things. The Government developed toluol and benzol.

Mr. MACBETH. That is all I have to ask.

The CHAIRMAN. Do you want to adjourn or go ahead this afternoon?

Senator JONES. I think Dr. Manning can give this committee all the information which I had especially in mind—that is, as to the quantity of these ores, where they are obtained, the prices of them and that sort of thing.

The CHAIRMAN. I think that is all prepared, is it not, Doctor?

Dr. MANNING. Yes, sir.

The CHAIRMAN. Have you anything else, Mr. Wells, to offer on the situation of sulphuric acid before we take a recess?

Mr. WELLS. No, sir.

The CHAIRMAN. Dr. Manning, is there anything that occurs to you that might be brought out by Mr. Wells?

Dr. MANNING. I should like to emphasize the statement made by Mr. Wells regarding the pyrite situation, Mr. Chairman. We are facing the situation here of having to provide certain minerals that have been cut off by the Shipping Board from importation from Brazil, of manganese of 40 per cent, amounting to approximately 244,000 tons a year; our annual imports are 610,000 tons; adding to that our domestic production, 114,000 tons would make 724,000 tons, deducting 240,000 tons which the Shipping Board has to cut off so as to utilize these ships to send materials and troops over to Europe, leaves us with 480,000 tons of manganese ores that we are taking care of now—can provide now; that means we have got to provide some 350,000 or 400,000 tons of manganese ores to take care of our domestic consumption.

In reference to the pyrite situation, the Shipping Board reduced pyrites this year from Spain to the following amounts: In April, 45,000 tons; May, 30,000 tons; June, 20,000 tons; July, 15,000 tons; and August and September, 10,000 tons, aggregating this year in round numbers 120,000 to 130,000 tons. That is a reduction of over a million tons a year of imported pyrites from Spain. We have got to produce that quantity in this country to take care of the situation.

Senator JONES. Right at that point, Dr. Manning, I should like to ask you to prepare some data, if you can. Mr. Wells has very graphically pictured the transportation feature in this country. Now, the railroads in the country are in about as bad a predicament as the shipping interests of the country, and must not this question of shipping transportation be considered in connection with the rail transportation, as well as the expense of handling these various metals, if we undertake the job on the scale indicated in this bill? In other words, can we assume that any order of the Shipping Board reducing importation is a proper order? Must we not investigate that and take into consideration all of the activities of the Government with reference to the general economic question involved?

Dr. MANNING. There is no question about that, and we have done it as far as possible.

Senator JONES. We are turning out ships now at a very rapid rate and there must be some kind of a back haul from Europe; there must be tonnage from Europe coming in this direction much smaller

than the tonnage going to Europe, and as an economic question had we not better investigate the advisability of the order which you say has been made by the Shipping Board with reference to bringing pyrites from Spain and with reference to bringing manganese from Brazil, or developing the manganese in Cuba? I think I see very great difficulties along these lines; it looks to me as if the undertaking proposed in this bill is one of the most monumental things that has been brought to my notice in the history of this Government. The intricacies and the vast number of important questions to be dealt with are bristling in this bill, and the expense of it, the amount of money to be used is something, to my mind, stupendous, and if we can derive some scheme which will take care of it in a better way from an economic standpoint, why I am willing to say that I should like to see it done.

We want to find out what the actual trouble is, and, in each instance, figure out the best way of handling that particular thing.

Dr. MANNING. I will say, Senator, that a representative of the Shipping Board has told all of us in turn in regard to this bill that they will appear before the committee; that the Germans are destroying 20 per cent of our shipping now; that the next six months will be the most vital time with our shipping; that in 12 months from now they will be able to catch up that 20 per cent loss, and after that be able to furnish ships probably to take care of the supplies and troops going to Europe.

Senator JONES. Do you not believe, Mr. Manning, that we ought to get together all of that data so that we can have the problem before us somehow?

The CHAIRMAN. I would suggest, Dr. Manning, that if you can you have some member of the Shipping Board come up and explain that order.

Dr. MANNING. We will do that, sir.

The CHAIRMAN. It has been suggested to me by some of the members of the committee that we shall not try to hold afternoon sessions for a few days until some of the work over in the Senate is out of the way. Have you any persons you wish to call that are in a hurry to get away to-day?

Dr. MANNING. I do not think so.

(Thereupon, at 12.10 o'clock p. m., the committee adjourned to meet at 10 o'clock a. m. to-morrow, Saturday, May 4, 1918.)

# MINERALS AND METALS FOR WAR PURPOSES.

**SATURDAY, MAY 4, 1918.**

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met at 10 o'clock a. m., pursuant to adjournment, Senator Charles B. Henderson presiding.

Present: Senators Henderson (chairman, Shafroth, and Sterling; also present, Dr. Van. H. Manning, Director of the Bureau of Mines.

The CHAIRMAN. The committee will come to order.

Mr. Leith, you have some matters to present to the committee, have you, in regard to the bill under consideration?

Mr. LEITH. Yes, sir.

The CHAIRMAN. The committee will be glad to hear you.

## STATEMENT OF MR. C. K. LEITH, CHAIRMAN OF THE COMMITTEE ON MINERAL IMPORTS AND EXPORTS, UNITED STATES SHIPPING BOARD.

Mr. LEITH. Mr. Chairman, I have not prepared a formal statement. I will state that I am serving as chairman of the committee on mineral imports and exports of the United States Shipping Board, which has been determining restrictions on bulk imports and exports of the mineral commodities.

We have, with the cooperation of the Bureau of Mines and Geological Survey, the War Industries Board, and in fact all of the governmental organizations which have anything to do with minerals, studied the situation to find out what could be eliminated from vessel space and substituted from domestic sources. It has been our purpose not to cut off shipments of any mineral commodities unless we could see something substantially equivalent in this country, or in near-by countries, or unless we could see some immediately practical economy in the matter of saving, something the trade was pretty well agreed upon could be done within reason in a short time. In getting at these changes in practice and substituting low-grade for high-grade ores, and the possibilities for the increase of domestic production, we have quite a great variety of expert help from various sources, not only in Washington, but in the trade and around the country.

The result is that we have put a complete embargo on a number of mineral commodities, and have restricted a number of others. Certain minerals, after a study, we find can not be restricted: in

fact, steps must be taken to get an increase in the amount coming from overseas.

Now, part of those restrictions have gone into effect; all of the recommendations have gone forward to the Shipping Board and the War Trade Board. The War Trade Board is the one which through its licensing bureau actually puts these restrictions into effect. They are on that task at the present time. Only a part have actually been put into effect. That part, however, includes minerals like manganese and pyrite which illustrate pretty well the problems which we have in the entire list.

Senator STERLING. May I ask, is there an embargo upon the shipment of these materials?

Mr. LEITH. Partially; yes, sir.

Senator STERLING. That is, an embargo to prevent their going abroad.

Mr. LEITH. Not an embargo to prevent their going abroad. The export side is much less advanced. That is being studied now, but in certain cases we have put also an embargo on the export side, where it was necessary to trim down imports very considerably. It was necessary to stop miscellaneous leaks in shipments abroad in order that we might be assured of our supplies, and as far as the exports are concerned, I think the important leaks in the raw mineral commodities have been looked out for. But for the entire list, it is rather a difficult question to settle. It is necessary to consider other countries' needs, and that is a little more difficult than in considering our own.

Senator STERLING. That is what prompted me to make the inquiry.

The CHAIRMAN. Have you made any orders relative to the importation of pyrite?

Mr. LEITH. Yes, sir.

The CHAIRMAN. What are those orders, if you can state them?

Mr. LEITH. It was estimated that under normal conditions the demand in sight for 1918, there would probably be imported from Spain somewhere in the neighborhood of 700,000 to 800,000 tons of pyrite. After going over the situation with the trade a conference was held at which a committee was appointed, representative of the principal parts of the pyrite and sulphur trade, including sulphuric acid people, to recommend a certain cut in tonnage, and they recommended that to begin with April 1 the importation from Spain should be cut to a total of 125,000 tons, at a diminishing rate, which would bring the rate of shipment in August down to 10,000 tons almost to the disappearing point. If continued for the next six months at the same rate, it would mean 250,000 tons for the next year as against the normal importation of 700,000 to 800,000 tons. So it meant cutting the importation from Spain to about one-third. However, it was assumed, by putting in this diminishing rate, that the next six months would, if the domestic conditions warranted, run along at the lower rate indicated; in other words, 10,000 tons a month, and if that were true, it would mean that the total for the year would be considerably less than 250,000.

The CHAIRMAN. And to take up then this loss it would have to be produced in this country.

Mr. LEITH. Yes; it would have to be produced in this country.

The CHAIRMAN. Will you tell us where, in Spain, the shipments are made of pyrite?

Mr. LEITH. The principal shipments are made from the port of Huelva, in Spain.

The CHAIRMAN. Is that the southern or northern coast?

Mr. LEITH. The southern or southwestern.

The CHAIRMAN. And to get to that port you would have to go into the Mediterranean Sea?

Mr. LEITH. Not necessarily.

The CHAIRMAN. Where would you go to land at that port?

Mr. LEITH. There are boats coming from the Mediterranean that can touch at Huelva with very little difficulty. The boats returning from France, from a number of the northern ports of France, would have to make a long southern journey in order to connect with Huelva.

The CHAIRMAN. Do they pass Gibraltar?

Mr. LEITH. No, sir; they do not pass Gibraltar.

The CHAIRMAN. They would be just north of Gibraltar?

Mr. LEITH. Yes, sir.

The CHAIRMAN. The coast then that they would land at would be south of Portugal. Do any of the ships that ply from here to France bring back pyrite now?

Mr. LEITH. I can not tell you that. That question, as to what particular ships shall bring pyrite, is now in the hands of the ship controller and is being worked on. I heard yesterday from the ship controller's office that instead of sending over full cargoes of pyrite they were considering very seriously running only half cargoes of pyrite on account of the nature of the ships which they propose to use. They said there were some difficulties, because of the nature of bottoms available, from full cargoes. They figure that they can get better results from the ships by half-cargo loads. There is plenty of space coming back; it is a question of time in loading.

Senator STERLING. What was the object of making this greatly reduced shipment from Spain of pyrite? Was it in order that the tonnage might be had for other purposes?

Mr. LEITH. Yes, sir.

Senator STERLING. That is, the demand for other and more important purposes?

Mr. LEITH. The situation put up to this committee by the Shipping Board and by the ship controller was this: That ships were short for the important military purposes; that preliminary calculations of any possible saving in ships from any direction indicated it would not be possible for us to release too many ships; in other words, we would still be short of military requirements. Therefore, it was not for us to determine any limitation in releasing ships for them, but to release all we could release; that they would use every ounce of space. In case of return cargo from Spain, there were plenty of ship bottoms coming over, but the question of time—the loading time—the discharge and delays come in, which amounts to the same thing.

That is a rather difficult technical question which the Shipping Board has gone into from various angles, but the evidence is ade-

quate that there is delay in loading for return cargo, and any saving in this way means an equivalent saving in ship space.

As a result of these restrictions, it becomes immediately necessary for the trade and all the governmental agencies to see to it that the deficit is made up in some way. We have made these cuts on the basis of estimates as to what is possible, and in that we have tried to eliminate all sorts of utopian claims of local producers. We have tried to take the actual performances of recent years and project that into 1918 and give proper discounts for safety, but where it is physically possible to produce certain tonnage in this country in certain properties we had to assume that it was going to be done and nothing was to be allowed to stand in the way with respect to price or railway priorities or in the way of any other difficulties that might come up. We had to assume that the ship element in the situation was inelastic and could not be changed, whereas others could be. It was no particular business of this committee to follow up the domestic program, the increase in production necessary, and the changes in practice necessary, except in so far as it affects the ship program. In other words, if there is not development, which we figure in the estimates, this naturally will create a shortage which will react immediately upon this restriction, and this committee will stand in the position of having recommended something which was not reasonable and which was really very damaging to an industry.

It is apparently not the particular business of any other Government organization to follow this up. The War Industries Board is doing a certain amount of work along this line. The Bureau of Mines has been doing excellent work, and the Geological Survey has been following the situation closely. Various other bureaus are touching the situation at various angles. Producers themselves, consumers, and manufacturing interests have voluntarily done a great deal. In fact, some of the main steps thus far taken have been taken by private interests involved. They have seen the situation, which has been explained to them, and they are using their very best efforts to get these results in certain of these commodities.

Now, it is not, as I say, within the committee's business to follow these things up. We have been hoping that some other governmental agency would undertake this particular business and take complete responsibility for following up the situation, but in the absence of any centralized authority, apparently it is one of those situations where it is everybody's business and nobody's business. We have felt it absolutely necessary to keep up with the situation to a certain extent. In fact, scarcely an hour goes by in our office that we do not get wires or calls from some part of the country, saying that because of some unexpected difficulty there is going to be a shortage from some domestic source—"We want some more imported ore." Therefore it throws the matter up to us. We refer the matter to the War Industries Board or the Geological Survey, or elsewhere, to ascertain if there is sufficient authority to really meet the situation; and that authority really involves not only such factors as I have spoken about—the railways—but the allocation of supplies, the consideration of price, and various other factors which enter into, more or less, the obstruction of the orderly progress of production, which we think is clearly possible.

In the manganese trade, there has been a rather typical situation developed, due to the cut in importation of manganese ore from Brazil, which has been reduced something like 40 per cent. Normally, it would have run in the neighborhood of 600,000 tons and above, and we have reduced it to the rate of 350,000 tons. Manganese, you know, is highly essential to the steel industry. The steel industry would go out of business unless they could get a manganese supply.

Senator STERLING. Was that reduced for the same reason as the reduction in the importation of pyrite?

Mr. LEITH. Exactly; all of those reductions were made solely from that point of view, to save ship tonnage and ship space

The CHAIRMAN. What would you bring back from Brazil in place of manganese, for instance, which you reduced to prevent the shipment of manganese from Brazil?

Mr. LEITH. Not necessarily anything. There are three or four commodities which are clamoring for ship space from Brazil—coffee, rubber, and manganese are the three essential ones, and those will fill more ship space than we are likely to send down. We have not considered very strongly the factor of return cargo to Brazil, because that includes such a miscellaneous variety of perfectly useless things, as far as the war is concerned. There should be no curtailment of essential material that goes down to fill that return cargo space.

The CHAIRMAN. As a matter of fact, we need a great deal of rubber now. Just recently there was a meeting in the city to consider the greater importation of rubber into this country.

Mr. LEITH. Yes, sir; that, however, I believe, has been restricted somewhat to our specific needs. But even with that restriction, the ship controller is finding very great difficulty in getting boats to bring back the necessary commodities from Brazil. In fact, at the present time the minimum manganese program, which we recommended, and which in itself represents a considerable cut on the normal program, is not being met by the ship controller. Last month, instead of bringing in 35,000 tons, as we recommended, the total receipt was about 15,000 tons. That was partly due to the loss of the *Cyclops*, but even with the *Cyclops* it would have fallen short. The steel industry has been making very strenuous representation to get that minimum tonnage brought up to date immediately, because their stocks are near the danger point.

Now, to follow the manganese story a little further, I will go into that in some detail, because it seems to me to show the situation rather typically. We had very careful estimates of the possibilities in all the districts in the United States and Canada and near-by countries; we went into the situation in Cuba. We figured out what the increase production could possibly be. We went into the question of economies that could be used in the steel trade, the substitution of low-grade manganese alloy for the high-grade manganese alloy, and the substitution of low-grade ore for high-grade ore, and the elimination of manganese for certain nonwar purposes, in consultation with the steel industry, and many others.

Now, naturally, at first there was a little conservatism on the part of the steel trade concerning some of these possibilities. In the first meeting of the ferroalloy committee, the committee made representations to the effect that it would be dangerous to make any

cut whatever. After taking the figures and going over them and considering the matter a little further, they came forward and accepted substantially the proposition made, and agreed to do their part, and they are doing their part.

They have reduced their specifications for the high-grade manganese alloy, called ferromanganese, from 80 per cent manganese to 70 per cent manganese. They have also taken steps to make larger substitution of low-grade manganese alloy, or spiegeleisen, to a large extent. They have taken steps to eliminate certain other uses of manganese. So that at this moment there is no substantial difference of opinion between the Shipping Board, or any other governmental agency and the steel people as to what the situation is and what is necessary. They have agreed that they can get along, and will try to get along on this reduced importation and are taking steps accordingly. I have a letter that I received this morning, sent to me by Mr. Farrell, chairman of the subcommittee on ferroalloys, who is also president of the United States Steel Corporation. We attended a meeting at Mr. Farrell's office on Saturday, and discussed the situation and reached an agreement, which was definitely formulated in a letter by our committee to the Shipping Board, and approved not only by the ferroalloy committee but by the War Industries Board.

As a result of this meeting, Mr. Farrell has called a meeting for next week (Tuesday) of the entire steel trade in order to get definite action. I will read his letter, because it shows one of the specific effects of the shipping embargo and the situation which really ought to be developed in all of the mineral commodities. The letter is as follows:

AMERICAN IRON AND STEEL INSTITUTE,
SUBCOMMITTEE ON FERRO ALLOYS,
*New York, May 1, 1918.*

DEAR SIR: You undoubtedly know that the United States Shipping Board, in order to transport to Europe the men that Gen. Pershing needs and the necessary supplies and munitions needed by them and by our allies, has found it necessary to put into the North Atlantic trade every vessel suitable for that service. To accomplish this it has become necessary to restrict to the maximum extent possible the imports of all materials that come from overseas.

Great Britain, which has heretofore been our principal source of supply, is no longer able to ship ferromanganese in quantity, and this metal has to be manufactured in this country. While small quantities of suitable manganese ore are obtained from Cuba, Central America, and India, the aggregate is not large, and Brazil is the principal available source of supply.

The production of domestic ores suitable for the manufacture of ferromanganese has greatly increased in the last two years, and it is believed that the output in 1918 will be still greater; but to utilize these ores it is necessary to lower the standard of ferromanganese from 80 per cent Mn. to 70 per cent Mn. Spiegeleisen can be substituted for ferromanganese in the manufacture of much of the higher carbon steels, and there is a large tonnage of domestic ores for the manufacture of spiegeleisen, provided the standard is lowered from 20 per cent Mn. to 16 per cent Mn. With all this accomplished, there still remains the necessity of importing a considerable tonnage of manganese ore from Brazil, and the Shipping Board, the War Trade Board, and the War Industries Board are cooperating with our committee to supply the vessels necessary to carry this ore.

It is evident that under these conditions it is the patriotic duty of every steel manufacturer to conserve the use of manganese to the maximum extent possible; and it is believed that by the substitution of spiegeleisen for ferromanganese, as above mentioned, the lowering of the manganese content in the standard grades, and in other ways a material saving in the use of manganese

and consequently in ships necessary to transport manganese ore overseas can be accomplished. The same general condition obtains as regards chrome ores, especially for refractory use, and all possible reduction in such use is necessary.

To discuss this situation and to devise means for accomplishing it, you are invited to send representatives to a meeting to be held Tuesday, May 7, 1918, at 10 o'clock a. m., eleventh floor, Carnegie Building, Pittsburgh, Pa. It is requested that you send representatives authorized to speak for and commit your company from both the metallurgical and the operating standpoint.

We particularly request that your representatives be instructed to say on behalf of your company that you are willing to give the benefit of your practice and experience, wherever it might result in the saving of manganese or chrome ore, to authorized representatives of any of the other steel manufacturers. We would also like your representatives authorized, if requested, to formally pledge your company to do all possible in reason toward the conservation of manganese and chrome ore in the manufacture of steel.

Please telegraph the undersigned promptly whether you will attend and the names and titles of your representatives.

Yours, very truly,

JAMES A. FARRELL, *Chairman.*

There is a case where the steel interests themselves have made very marked progress. With respect to some of the other minerals nothing like that progress has been made. In chromite, for instance, we think practically the same program can be followed. We are hopeful of voluntary cooperation on the part of the trade to a certain extent. But looking at the situation as a whole, it is, I think, beyond question true that we can not expect the trade to do all that must be done in this particular case. They will go as far as they can; they will do a great deal, but there are certain things that they can not do. They probably can not make the allocation of supplies among themselves, and perhaps can not get together for price fixing or any of the other necessary things. They can not control the governmental railway situation as far as it affects this program and certain supplementary aid is going to be necessary.

Now, the essential point I want to make is, Such progress as has been shown in manganese is possible in most of the other mineral commodities which are restricted; that now it is not the main business of any particular Government organization to see to it, but all are cooperating voluntarily to do what they can. But the situation is confused. It is only by occasional individual actions here and there that these things are accomplished, and it is perfectly clear that it is a situation that will not stay fixed more than a few days at a time. The Steel Corporation and others will continue these steps with regard to manganese, but there are problems that are going to come up with regard to these restrictions on Brazilian imports, and the making of necessary adjustment, that ought to be referred back to some authority to follow it up and see that everything is correlated. As it is now, they send representatives to Washington instructed to see certain people. A certain representative of a large interest was in our office yesterday and showed me a list of names of people that he had been instructed to see scattered all over Washington. He did not know just what authority these men had, but under the situation that was all he could do, and I have no doubt before he got out of Washington last night he had perhaps half a dozen different points of view on this situation, and went back perhaps with a confused notion as to what the immediate requirements of the situation might be.

As I have stated before, I am not personally concerned so much about the particular framing of authority as I am in getting some man on the job in whom is centered this requirement for following it up. A great deal of this can be done without specific authority by somebody with energy, who has power to follow it up and can use all existing agencies. It would seem to me to be desirable in case this bill is passed to go on the assumption that any man put in charge would, as a matter of fact, use all of the existing Government agencies for anything that they can accomplish. It will be a mistake to put in an administrator, or anything in the nature of an administration, who would go ahead independently and try to make a new program. In fact, the big problem, as I see it, in the matter of machinery and actual administration, is the correlation of the existing agencies.

Senator STERLING. Mr. Leith, you have read this bill, have you not?

Mr. LEITH. I have read the bill; yes, sir. I read it two or three weeks ago, but will have to confess that I have looked it over only in a very casual fashion since certain modifications have been introduced.

Senator SHAFROTH. There have been some changes in it; one is the striking out of the provision concerning the fixing of prices. Now, I presume, Mr. Leith, that the object of this bill is first to stimulate production in our own country and secondly to prevent such exorbitant profit as would make it injurious to the Government and to the people who have to buy the articles that arise from their manufacture. The question which seems to me most vital in the case is how those two excellent objects can be obtained. I can easily see how a guaranty of a minimum price will stimulate production, but when it comes to the question of limiting the amount of profit that can be made it becomes very difficult, in my mind. I dislike to interfere with the general principle of economics of supply and demand, and for that reason my tendency is to feel that the best way is to stimulate production by this guaranty of price and then let the question of the increased production automatically lower the price, and at the same time require the party, of course, who makes exorbitant profits to reaccount to the Government in the way of a large war-profit tax.

Now, I would like you to outline, if you can, what is the program in regard to fixing a minimum price under this bill. To express myself more clearly, is it proposed that manganese of certain percentages shall be uniformly everywhere guaranteed by the Government, that it shall bring a certain price and the Government will take it at that price, or is it proposed that there shall be some kind of agency to determine what is a fair and reasonable amount to guarantee in order to increase and stimulate the production by fixing in certain localities or certain mines the amount that the Government will guarantee?

Mr. LEITH. In so far as my knowledge goes, there is no specific plan agreed upon to handle manganese ore. The War Industries Board is considering at the present time that question very carefully, and has called upon the ferroalloy committee of the American Iron and Steel Institute for suggestions along that line in the discussion that is now going on. There are many points of view and differences of opinion, first as to the necessity for any price fixing whatever, and

secondly as to basis upon which that price fixing should be based. I personally have no strong opinion on the subject. My own feeling would be to let that matter run in the hands of the trade, with cooperative discussion, to see how they might work it out before trying to superimpose upon the situation anything rigid in the way of governmental action.

Senator SHAFROTH. But it becomes necessary in order to stimulate production, it seems to me, that a guaranty should be made for some definite period, otherwise you would not get people to open up new mines.

Mr. LEITH. That may be necessary in some cases and in others not. For instance, at the present time the principal fear on the part of the War Industries Board is that there will be a runaway market of domestic manganese because of the shortage of supply from abroad and the competitive bidding of a number of buyers trying to protect themselves against the future, and the action of some of those buyers in the last few weeks in picking up low-grade supplies—there has been a considerable amount of purchasing—would indicate that they are paying enough and are prepared to pay enough to bring that necessary amount. They naturally would, with their supply restricted from the usual sources, in other words, Brazil. The only question now is whether in this competition the prices might get to a very high point, in other words, soar, and require some sort of allocation. They are now considering whether the matter should be stabilized or whether it should be left to the buyer. There are not a great many buyers to work out some scheme of their own whereby the necessary supply would be brought out, but the situation might be otherwise greatly disturbed.

Senator SHAFROTH. Now, on the question of buying, while that might be important, the most important question, it seems to me, is the stimulation of production, because if it gets into the market it is better to have some even if it is high priced than to have none at all, and on that account, it seems to me, the first thing that we ought to determine with considerable certainty is as to how you are going to have a guaranty by the Government and how much of a guaranty ought to be made, and whether it should be in the bill itself or left to some officers of the Government to fix that guaranteed price.

Mr. LEITH. Personally I should feel that it would be a mistake to attempt to put that in the bill itself, because the situation is different on each of the mineral commodities; the situation differs from day to day, and I do not think the man lives who can really foretell the conditions that are likely to come up within the next two or three months.

Senator SHAFROTH. So you think the way to do, at the present time, at least, is to have some officer clothed with authority to guarantee in the name of the Government the minimum price of these various articles that are mentioned, the minerals that are mentioned in this bill.

Mr. LEITH. If he thinks it necessary or desirable.

Senator SHAFROTH. And that depends, of course, upon whether they will produce sufficient without any guaranty at all, or whether we will give them a guaranty which will induce a person for a definite period of time to produce and open up new mines.

Now, as to the second proposition, of regulating the maximum price, that portion of the bill has been stricken out, section 13, but there is left in the bill a section that provides for the licensing, under certain

rules that might be made, which are made, it is said, to fix the margin of profit and the royalties that the manufacturer is to get at not an exorbitant rate, and with certain power to say that he shall not pay any more than the certain amount; "you shall not make any profit more than a certain amount, and if you do make any such profit we will close you down and stop your manufacturing."

Now, I will ask you whether that kind of proposition is as good as leaving it to the operation of supply and demand, in the matter of price, and having excess profits regulated by a war tax that would make the person yield up a certain portion of his profits and thereby prevent him from making an exorbitant price, or if he does, a great portion of it will go to the Government. Which do you think the more preferable way of dealing generally with the question, without going into details?

Mr. LEITH. I have not given the matter sufficient consideration to have a decided opinion based upon full consideration, but my feeling is very strongly that the latter proposition you suggest is the preferable one, under the circumstances. In other words, the more I see of the variety of difficulties in each one of these mineral commodities the more I feel that any one man, any bureau, is going to have difficulties in setting a proper maximum price and really control the situation, and it would seem to me that better progress could be made by letting the law of supply and demand work just as long as it will work. In war times there comes a limit to the time in which it will work properly and in which some sort of action might be necessary, but I would not feel at the present time that it was necessary to assume in each case that this maximum price should be settled at once.

Senator SHAFROTH. Would not a fixed and maximum price result in making an enormous profit for one and perhaps no profit for another, depending upon where his mine is located, in distance from the railroad, and various other conditions, the character and grade of his ore, and things of that kind?

Mr. LEITH. It very likely would have that result unless it were fixed with a great deal of care and with due regard to all the factors you mentioned. I presume that any price fixing that was attempting would attempt to take into account the difference of grades of ore, location, uses, and all other factors which might determine the value at a given place.

Senator SHAFROTH. That would make it necessary to fix the price on each particular mine, would it not?

Mr. LEITH. It would come almost to that.

Senator SHAFROTH. At least in very limited areas and districts where the ore is produced.

Senator STERLING. With the supply now shut off, the supply from abroad, or greatly restricted, the price would be enhanced under the law of supply and demand, would it not, in this country?

Mr. LEITH. Yes, sir.

Senator STERLING. Now, would that not enhanced price itself, under the operation of the law of supply and demand, be a sufficient stimulus to the production, without any guaranteed price on the part of the Government, where we have the sources from which they may be produced?

Mr. LEITH. Yes, sir; I think unquestionably the result will be as you indicate, but there is another factor in the situation, and that is

the length of the war, or the length of the period during which this situation will obtain. In order to get increased supplies, it is going to be necessary to draw on many small deposits of short life and on many deposits which under normal conditions, when we are getting the ore from abroad, might not be operated. They must operate on a narrow margin of profit, if any at all. The operator may have to-day, or the owner may have, an ore body and he figures it is going to cost him half a million dollars to equip that and develop it, and if he could get that equipped and developed at once, he could figure on a very satisfactory profit. But in order to get back his capital charge he must assume a certain period of time, and he must be guaranteed the price through a certain period, in order to return his original investment, and that is, in my judgment, to-day holding back a certain amount of development. Those men say, "Yes; if we had this in operation to-day, we would be making good money, but by the time we get a plant built, and long before we get the price of the plant back, what is the situation going to be. You can not predict; I can not predict; and nobody can predict, and therefore, we will not risk our money."

Senator SHAFROTH. Are the laws now sufficiently strong against combinations or hoarding, or things of that kind, or do they have a tendency to permit corners in markets? Corners are one of the means and agencies by which an undue profit is made, and of course we want to avoid that if we can. We want the principles of supply an demand to automatically respond to exactly the condition and not to the artificial conditions made by attempting to hoard or attempting to get a corner on anything or large buying, excess buying, and things of that kind. Do you suggest anything by which that condition can be avoided in the way of new laws?

The CHAIRMAN. If you will pardon me, Senator, Mr. Moore is present and desires to make a brief statement at this time, as he has to leave the city. If Mr. Leith will suspend at this moment, he may return on Monday morning.

(Mr. Leith was thereupon temporarily excused.)

## STATEMENT OF MR. PHILIP N. MOORE, ST. LOUIS, MO., CONSULTING ENGINEER, INDEPENDENT.

The CHAIRMAN. Mr. Moore, I understand that you have a statement that you would like to make in regard to the bill that is before the committee.

Mr. MOORE. Mr. Chairman, I do not know that I can add much to what the gentlemen before me have said, without unnecessarily detaining you. There is one point, however, which I have heard repeatedly made, which is partly referred to by Dr. Leith, and that is the element of time in the matter of supply and demand under these war conditions is of such weight that the usual results of supply and demand fail to follow. Another is that the minerals mostly affected by this bill, namely, pyrite and manganese, which exist in the United States, are in relatively small bodies, mostly owned by individuals, and not corporately controlled in units, and under normal conditions unable to operate, partly due to the much larger and cheaper supply obtainable from abroad, and partly due to the fact that manufacturing industry is controlled while the producing is not.

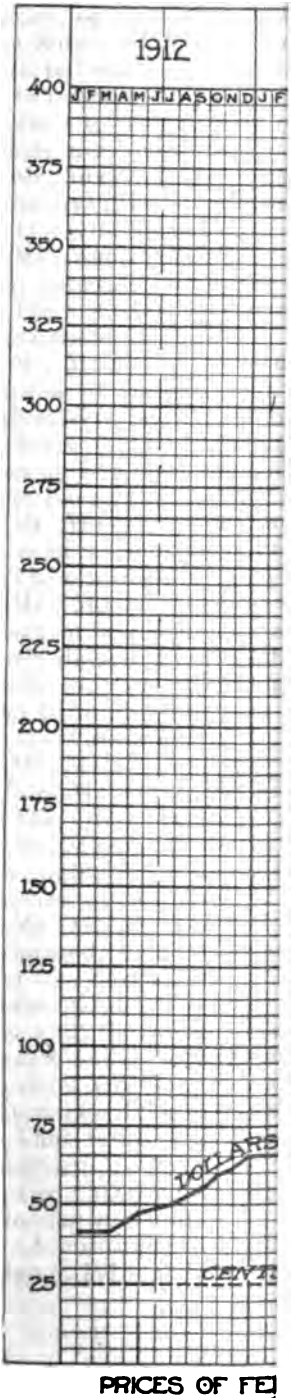
In my testimony before the House committee upon this bill, I alluded to one instance of the difference in price between the manganese alloys and manganese ores, a chart for which had been worked out by Mr. Hewitt of the United States Geological Survey, and a copy of which I have with me—I am sorry that the other gentlemen of the committee are not with me—but which will show you something of what is the normal condition of affairs in the manganese ore industries in prewar times. This chart covers the market price from 1912 to the present time. Due to the fact that there was only one large manufacturer of manganese alloys in the United States, the price per unit for manganese or domestic ore has been kept practically at one stable level for four years, while the price of the alloy varied greatly with, at times, an excessive spread between the ore and the alloy. That spread, as is evidenced here [indicating on map] varies excessively, and in the last two years has been very great, allowing an excessive profit on the manufacture. That can be controlled. That spread will doubtless at the present time, under the inhibition of foreign imports, diminish, but it is a condition which under the highly controlled manufacturing system can only be affected by the hand of governmental power. Supply and demand will affect it for a time, but there again the element of time comes in, and you may see a sudden spurt, a very high price for manganese ore, which will possibly be so high that the margin of profit will be slight, but in the end, as long as the manufacture is controlled, and there is no governmental control of price, that unstable and unfair condition will obtain.

The CHAIRMAN. Without objection, this chart will be incorporated in the record.

(The chart referred to is here shown.)

Mr. MOORE. Now, with respect to the matter of pyrite, there are concrete instances, which I shall be glad to have go on the record, why development would proceed if the consumer of pyrite ore, and the manufacturer of acid, were not able to control the market himself and refuse a fair price, or, which is just as bad, refuse a time contract.

At the present time certain parties are estimating and figuring seriously on the construction of a plant in our western coal fields to produce pyrite ore by concentrating the pyrite waste from the coal mine, which is very large. There are thousands of tons of pyrite going to waste in our Illinois, Indiana, and Kentucky coal fields today, absolutely unsaved, a large portion of which might be utilized at a guaranteed price. The gentlemen who are planning this work know what they can do in the treatment and know what their cost will be, and know approximately what they can get the raw material for; but the acid burners, so far, have been unwilling to give them any time contracts at satisfactory figures. The acid burner has been accustomed to deal with many small pyrite producers or to use sulphur from our Texas and Louisiana fields, and he has had a certain domination over the small pyrite producer, such as a manufacturer always has. In my judgment, nothing except Government control can handle that situation and stimulate the production to the degree which is needed. We are up against an impending shortage of pyrite, which is going to require either long-haul supply from the Rocky Mountains, which in turn will consume rolling stock and time and

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D. F. Hewett, Div. Min. Res.
U. S. Geological Survey

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money, or some time guaranty which will bring the stuff out from the East. Supply and demand is a mighty good horse on a long race, but when he meets the impediments of war and danger he is apt to be outclassed by emergency.

The CHAIRMAN. You have read this bill, have you not, that is now before the committee?

Mr. MOORE. I have read the bill which is before the committee. I know the general purpose of it.

The CHAIRMAN. And the objects to be accomplished by the bill?

Mr. MOORE. Yes, sir; I was invited to the table at the time the war minerals committee drafted it in December.

The CHAIRMAN. What would you say as to the necessity for such legislation at this time?

Mr. MOORE. In my judgment there is no other existing authority capable of doing the things legally which are needed and which are expected to be covered by this bill.

The CHAIRMAN. In your opinion, do you think that such legislation as has been suggested, and is now under consideration, is imperative and necessary?

Mr. MOORE. In my judgment it is, and in my judgment it should be even more extensive than is covered by this bill.

The CHAIRMAN. What has been your business, Mr. Moore?

Mr. MOORE. I have been an independent mining engineer and operator for a great many years. At the present moment I am entirely detached and uninterested in any of the problems; I am financially uninterested in any of these problems which are before me, and I am able to speak from an entirely detached standpoint.

The CHAIRMAN. You are entirely disinterested?

Mr. MOORE. Entirely so.

Mr. MACBETH. Mr. Chairman, may I ask Mr. Moore a question?

The CHAIRMAN. Certainly.

Mr. MACBETH. Could the pyrite that is in the coal fields be used in the manufacture of sulphuric acid that could be used in the manufacture of powder?

Mr. MOORE. Not for powder, but for agricultural acid. As I am informed, it is the intention to commandeer the entire sulphur output—at the same time, I do not know why that is, but ultimately the entire sulphur output. I can see that coming from the governmental demand, that ultimately the entire sulphur production of the United States will be commandeered for munitions work and the other industries will have to come to pyrite. This coal pyrite is not entirely satisfactorily, but it can be used for fertilizer work.

That is all I have to say, and I thank the committee for its courtesy.

The CHAIRMAN. The committee will now adjourn until 10 o'clock Monday morning.

(Accordingly at 11.20 a. m., the committee adjourned until Monday, May 6, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

**MONDAY, MAY 6, 1918.**

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met at 10 o'clock a. m., pursuant to adjournment, Senator Charles B. Henderson (chairman) presiding.

Present: Senators Shafroth, Jones of New Mexico, Walsh, Poindexter; also present Dr. Van. H. Manning, Director of the Bureau of Mines.

The CHAIRMAN. The committee will come to order. Mr. Leith will resume his statement.

## STATEMENT OF MR. C. K. LEITH (Resumed).

The CHAIRMAN. Mr. Leith, you were asked a question by Senator Shafroth on Saturday just at the time you were excused for the day, and I notice by the record that the question was not answered by you. Are you prepared to answer the question at this time?

Mr. LEITH. Yes. I will read the question if you wish. It is as follows:

Senator SHAFROTH. Now, do you think, for the prevention of exorbitant profits, the laws are now sufficiently strong against combinations or hoarding, or things of that kind, that that would have a tendency to permit corners in products? That is one of the means and agencies by which an undue profit is made, and, of course, we want to avoid that if we can. We want the principle of supply and demand to automatically respond to the exact condition and not to the artificial conditions made by attempting to hoard or attempting to get a corner on anything or by large buying, excess buying, and things of that kind. Do you suggest anything by which that condition can be avoided in the way of new laws?

In answer to that I want to state that as a result of putting in these shipment embargoes we have had brought rather vigorously to our attention some of the consequences, and we can see what the consequences would be, but as to the particular laws and means of lightening the situation we have not primarily concerned ourselves. That is not primarily our business; in fact, we have had our hands more than full with the other side, but it seems that the present laws, as far as I know them, are not adequate to cover the situation. Take a mineral like manganese, for instance, and the cutting off of the importation of the manganese develops several problems. In the first place, the amount of manganese which is still allowed to come in must be regarded as a higher grade than the domestic product, which is essentially low grade, and it is essential to see that it does not get into the hands of any one or two or three people and used and not

distributed, in order to leaven the entire mass of low-grade material, because certain of the low-grade material can not be used unless you have this higher grade material to mix with it. There is a problem of allocation to be considered in connection with the problem of price and the ability of the market to take it. Then with the problem of the higher-grade manganese we have, and the two things are naturally the targets of the principal buyers some of the time, and also some of the low grade. The situation has not yet developed far enough so we can see exactly what dangers there are in the situation, but some of the consumers are already pretty much alarmed for fear they are going to be crowded out. The War Industries Board is giving a considerable amount of attention to that question, as to whether or not it is necessary for them to go in and seize the stuff or allocate it, but to determine some way by which this domestic product shall be allocated, who shall buy it, at what price, what stock the individuals shall be allowed to hold; that is all a big, complicated problem.

As far as I know, the War Industries Board has not reached any definite decision on it, but they have put up certain questions for discussion to the Ferro-Alloy Committee on the Iron and Steel Institute, which represents about 100 per cent of the users of manganese, or nearly that, to see if they can get any comprehensive suggestions from them. Now, I think, my feeling in the matter is, and I think it is the feeling of certain others who have been giving attention to it, that so far as the situation can be taken care of by voluntary agreement, voluntary undersandings with the aid and cooperation of Government departments, it ought to be done, but there seems to be a rather general feeling, in which I share, that that will not be enough. It is too big and complicated a problem to allow it to run that way, and it is very likely that in the course of a relatively short time, we do not know how soon, it may be a matter of days or weeks, unless somebody is hurt in this situation, unless there is a runaway market, unless some people are using too much high grade, or unless certain people can not operate because they can not get low grade, somebody has got to have power to control the business. As to the specific nature of that power, how it shall be exercised, whether it shall be exercised by sitting quietly or taking a firm hand and by allocation, or what combination of those two things shall be employed to control it, I do not know; I have not even a strong conviction on the subject.

There is another factor in the situation that is not likely to be taken care of by private interests. That is, a large consumer of manganese will, under the present circumstances and the shipping embargo having been placed on a part of the importation, go out and pay a pretty good price and generally get his supply for the immediate future, and he may be in fact quite a long way ahead, but naturally he does not want to tie himself up too far ahead; nobody knows how long this war is going to last, and nobody seems to be in a position to give the producer any satisfactory guaranty as to what conditions he may be able to expect a year from now, or even a few months from now; they will say "We will take your stuff now, but we do not know what we will do a year, or even a few months from this time," and in order to get our supply necessary

there ought to be something in the way of stabilization. Whether that could be accomplished or not I do not know, but a man with a manganese deposit which he can barely operate under the present conditions, or on which he can only make a small profit under present conditions, is naturally not going to invest a large sum of money to open it up if he feels that somebody is going to pull the chair from under him in a few months, and there is no agency in Washington which can communicate with any source of authority under which we can get any sort of understanding as to what our situation will be in case this war stops, or whether there is to be any guaranty of the market a year from now or 18 months from now. Whether it is going to be wise to make a guaranty I do not know, but if the situation requires it I would like to see the power in some one man's hands to get the results.

Senator JONES of New Mexico. Is there not some activity in the Government now which is allocating certain materials?

Mr. LEITH. Yes, sir.

Senator JONES of New Mexico. What is that?

Mr. LEITH. There are two general agencies; the War Trade Board, which has charge of the issuing of licenses on imports and exports, which has by a voluntary cooperative arrangement with certain large groups of consumers arranged for a certain degree of allocation. For instance, graphite is allocated through the Plumbago Graphite Association, which is an association of the graphite people in this country which came forward at the request of the War Trade Board and agreed to take over the allocation, and the licenses for graphite were made out to this graphite association, and they in turn distributed it, and several arrangements were made by the War Trade Board. That arrangement, however, has now been taken over by the War Industries Board, and the principal effort at allocation, as I understand it now, is being made by the War Industries Board under Mr. Baruch. That allocation has not yet actually gone very far. There have been a great many discussions; they have called the trade together, and various projects are under consideration.

Senator WALSH. We are not so much concerned in what has been done as, I take it, Senator Jones, what can be done under the existing authorization.

Mr. LEITH. I was just leading up to that. So far as I know, the fact is that at the present time the War Industries Board does not have complete authority under the law to accomplish that, and the plans which they have in hand for the immediate future in the way of allocation are based more or less on agreements with the various trade associations. They call in the people in the trade interested and say, "This thing ought to be done. Will you do it yourselves or shall we bring a certain amount of pressure to bear on you?"

Senator WALSH. Why have they not got full authority under the licensing provision?

Mr. LEITH. The War Trade Board might have that authority under the licensing division if they could find the proper agency.

Senator WALSH. Under the Overman bill that could be transferred to the War Industries Board, could be sent any place?

Mr. LEITH. Yes.

Senator WALSH. You can not say to any man, for instance, who is importing manganese, "We will give you a license to import this manganese, but you must distribute it so and so or we will not give you the license?"

Mr. LEITH. Yes; that very obviously can be accomplished if the distributing agency were at hand, but the distributing agency is not at hand. We have canvassed the entire list of mineral commodities to see what distributing agencies might be available, either in the trade or through any of the Government agencies, and in almost none of the minerals is there any satisfactory agency at hand. When they go to the trade it is pretty hard to get an agency that is thoroughly representative of all the trades. They are always fearful that certain interests will control, and they can not trust to the allocation, and the feeling in the trade itself is they would rather have the Government do the allocating, and that the Government could do it better than the agencies of the trades.

Senator WALSH. I do not quite understand that. Here is a man who is engaged in importing manganese. He has got to take a license practically for every importation that he makes. The War Trade Board or the War Industries Board says, "We will give you this license, but only on condition, however, that you distribute it in accordance with our directions." He imports the product, and A, B, C, D, and E are entitled to a certain part of that as indicated by the War Trade Board. If he does not distribute it that way the War Trade Board will not give him a license to make another importation.

Mr. LEITH. The question there is as to who is to determine how he is to distribute, to what parties and in what proportions, and that is the weakness of the present situation.

Senator WALSH. But we do not improve that. Suppose we put it under this bill in the hands of the Secretary of the Interior, the President may transfer it anywhere he sees fit under the Overman bill?

Mr. LEITH. Yes.

Senator WALSH. If he thinks the Bureau of Mines will do it best why he will direct the Bureau of Mines to do it; if for any reason or other he thinks the War Trade Board will handle it the best he would send it to the War Trade Board. If he thinks the War Industries Board would handle it best he would send it to the War Industries Board, so that so far as the allocation and distribution is concerned I do not see what additional legislation we need when we have got the licensing act, the exports and imports act, and the Overman Act.

Mr. LEITH. Those might be sufficient to take care of it. It is a question, in my judgment, having followed up the allocating agencies thoroughly, each of these minerals I find the trouble so far is no one of these agencies feel they have the power. The knowledge that it is distributed through a number of agencies, that they are acting in different ways, and there is no one agency with a definite and uniform procedure working on definite principles to handle all these minerals in the same way. My principal thought on this bill is on the question of centralization of control, and make the control definite ratehr than leave it in this indefinite and vague form, which everybody is now doing his best to accomplish under the existing conditions.

Senator JONES of New Mexico. That is the very purpose some of us had in mind in voting for the Overman bill, so just that thing could be done.

Dr. MANNING. No agency could allocate the production, as I understand that.

Senator JONES of New Mexico. That is probably true, but we were speaking of the importation.

Dr. MANNING. If under the Overman bill it were possible to direct the Bureau of Mines, or Mr. Baruch, or the War Trade Board to build up the necessary machinery to take sole responsibility that would largely clear up the situation. It would bring together these various attempts of allocation being made in different quarters on the basis of information to date.

Mr. MACBETH. May I explain to the committee this, in reply, that there is at present allocation of the cost of zinc to the entire satisfaction of the Government, the producers and the manufacturers. The system is this: The Government calls upon the lead producers to ship direct from their refineries and from their smelters a certain amount of lead to certain munitions manufacturers. The same thing is being done with copper. The Government has nothing more to do with it than to direct these men to make shipments direct to certain manufacturers. The same condition exists in connection with the smelters, the government on grade A spelter, and I think a redistilled or double distilled zinc, and all these metals are being distributed directly.

Senator WALSH. But if I understand these gentlemen aright, they say if that is being done it is a purely voluntary affair?

Mr. LEITH. In this manner, however. If these gentlemen do not do as told the first thing they know there will be an embargo on their shipments and they can not ship anywhere.

Senator WALSH. In addition to that, the Government will commandeer everything they have got?

Mr. LEITH. Yes, sir.

Dr. MANNING. For Government purposes only. No agency has the power to control the allocation for private industries.

Senator WALSH. The same condition obtains with respect to wool, as I understand?

Dr. MANNING. Yes.

Senator JONES of New Mexico. That gives them the legal authority of priorities in shipment?

Dr. MANNING. Yes, Senator. I will say that it is handled to the entire satisfaction of the parties, and I do not see, in reply to Prof. Leith, why that could not be done just as well with manganese or with sulphuric acid, or with anything else, when these other materials are being thus handled I can not see why minerals can not be included and handled in a similar manner.

Mr. LEITH. My thought was to centralize that and get it systematized. You would do better, I think, if we could do away with the lack of system in the present situation.

The CHAIRMAN. Mr. Leith, have you looked up the importation of pyrites from Spain, and are you prepared to give us the amount of imports and tonnage used in those shipments?

Mr. LEITH. Yes. Starting on the 1st of April, it was recommended that a total for the next six months of 125,000 tons of pyrites be

imported from Spain, as compared to the same six months of last year—332,333 tons. In other words, it was cut down to about 40 per cent of that rate. It was further recommended that the 125,000 tons coming in during the next six months come in on a diminishing rate, 45,000 tons in April, 30,000 tons in May, 20,000 tons in June, 15,000 tons in July, 10,000 tons in August, and 10,000 tons in September, the idea being to keep the larger importation going now during this period of readjustment, while domestic mines are being brought forward, and gradually to drop off in the hope that the domestic situation in that time would have been sufficiently developed so we could either eliminate the importation entirely after September or run along at some comparatively low rate, but no decision has been made as to what shall be done after September. That would naturally depend entirely on how the domestic situation has developed up to that time.

The CHAIRMAN. What tonnage will that save for other purposes?

Mr. LEITH. That will mean a saving for those six months of the difference between 332,000 tons and 125,000 tons—that is, 107,000 tons for the six months. That, put in the terms of a year, if that low rate runs along for the remainder of the year, there would be an additional 250,000 tons or 300,000 tons saved in cargo space, all of which will be made up from domestic sources. Now, in getting at that figure we have taken the estimates of the pyrites necessary for sulphuric acid and chemical and other purposes for the year—pyrite and sulphur for the year. We have taken into account the stocks on hand; we have taken into account the amount of Canadian pyrites which we could get, the amount of Cuban pyrites, the amount of sulphur available from smelter smoke, the use of the sulphur, which we have in large quantities in Louisiana, and the domestic production of our mines. We have added together those totals, subtracting from the total the figures from the importations, which we thought we could do with. That has been agreed to, as I said the other day, by the representative committee of the trade.

Let me say that this committee, in making this agreement, added this condition: "The above recommendation is predicated upon every effort being made by the Shipping Board to arrange for sufficient vessel tonnage to move the additional sulphur which will be required to replace the Spanish pyrites." In other words, a considerable amount of sulphur has to be carried around by coastwise vessels, for which there ought to be made some sufficient preparation, and further predicated upon efforts being made to see that some agency is intrusted with authority to allocate and redistribute existing pyrites stocks in order to enable each and every plant to keep running. These men in the trade are obviously afraid that under present conditions—and I am fairly familiar with the present Government conditions—that there might be trouble in store unless the situation were cleared up.

The CHAIRMAN. Take manganese that is imported from Brazil and other countries. What is the situation relative to that ore?

Mr. LEITH. The total importation from Brazil in 1917 was 512,517 tons, and estimates of the probable importation from Brazil this year, in case no restrictions were put on, show a minimum of 600,000 tons expected. The recommendation which has been made with refer-

ence to a cut in the importation is that not more than 350,000 tons of manganese be brought in. In other words, a cut of approximately 250,000 tons in the shipments. That was to be at a diminishing rate, starting with 35,000 tons in April and running on down to 20,000 tons by August. However, the importations for March fell off to a very unexpected extent, partly due to the sinking of the *Cyclops*, and instead of getting 35,000 tons or more that month, approximately only 15,000 tons were received. That has developed more or less of a crisis. It is not very acute, but nevertheless it has brought the stocks down to the lowest point, I believe, in our history. In the meantime there has not been opportunity to get into effect some of the economies that the steel trade plans, and there has not been time yet to see the full effect of this effort to stimulate domestic production, so at a meeting of the Ferro-Alloy Committee in April, on the 27th, it was agreed between the Ferro-Alloy Committee and Mr. Sanford, representing the War Industries Board, and our own committee on shipping, that this rate of 35,000 tons, which we recommended for April and May, be continued instead of diminishing, until such time as we made further recommendation.

Now, if we continue at that rate until the middle of August, that will just catch up with the rate that we originally recommended to bring it to 350,000 tons for the year; but we would have very great difficulty in getting ships even to get that minimum rate. The manganese interests have agreed that if we can get that minimum rate which we have recommended that they will attempt to meet that program, and think they can meet that program, while they originally asked for 50,000 tons a month, they are ready to go on the basis of 35,000 tons and make the necessaries and economies and efforts to stimulate domestic consumption accordingly. At the present time the main difficulty is even to reach that minimum through the shortage of ships, and very strenuous representations have been made to the ship controller, representations jointly by the Ferro-Alloy Committee, by the War Industries Board, to make a definite allocation, naming ships, and giving definitions so the steel trade and all concerned could know exactly what to do and how to plan their operation. In the meantime, as I stated on Saturday, the steel interests are using every effort to get the economies in the use of manganese introduced at once. They have also been very active in stimulating domestic production by going into the market and buying pyrites, both high and low grades, which is helping the mining situation.

The CHAIRMAN. Have you read over the list of minerals in the bill under consideration?

Mr. LEITH. I have. I should like to refresh my mind on them, however.

The CHAIRMAN. Does the same condition exist with reference to the other minerals as exists with reference to manganese and pyrites?

Mr. LEITH. To certain degrees; yes, sir. Each one of these presents its own peculiar problems.

The CHAIRMAN. Take mica, for instance. How much mica is used in the United States per year?

Mr. LEITH. I have not here the total for the United States. I have the Army and the Navy requirements and the estimated importation of sheet mica for 1918, if there were no restrictions. The estimated

importation would be 300,000 tons, which mainly comes from India by way of England. There is a small amount of mica that comes in from Brazil, principally on account of getting the Indian market.

The CHAIRMAN. Have you looked into the matter as to whether that metal could be produced in this country?

Mr. LEITH. Yes, sir; and to a certain extent it can be. It is a question of grade and use, and for certain of the uses the domestic mica can be substituted; for others it is more or less problematical. The entire tonnage of mica, however, which is imported is so small as to not make it a very essential shipping problem, and so our action has not been strictly drastic where the mica was essential to certain essential war trades.

Dr. MANNING. In 1917 the report made by the Geological Survey shows, estimated, about 900 tons imported; British, 60 per cent; from Canada, 36 per cent; domestic production, 650 tons.

The CHAIRMAN. Take tungsten and explain its production and importation and the extent thereof.

Mr. LEITH. It is expected that for 1918 the importation of tungsten into the United States for use in the steel alloys may be practically 4,500 tons. For 1917 it was 4,357 tons. That comes principally from South America, to some extent, however, from Asia. There are domestic supplies of tungsten which may be developed if the price is increased properly, but perhaps to a doubtful extent in the immediate future, so the tonnage being relatively small as compared with some of these other commodities, no recommendation as to restrictions of imports was made; it was decided to take in all that was offered. That, therefore, develops no immediate and definite problem with reference to the production of tungsten in this country; however, effort is being made, I think, on the part of the Geological Survey and the Bureau of Mines, to furnish it as far as possible. There is pending in addition to that an agreement as to the international allocation of tungsten. That is a very important matter for our allies, but that has nothing to do, but only indirectly affects the domestic situation.

The CHAIRMAN. Take up the situation relative to chrome.

Mr. LEITH. Chrome presents one of the most difficult and critical situations. The supply of chrome heretofore has come partly from this country and Canada, with smaller amounts from South America. The largest amount of the high-grade chrome supply has come from New Caledonia, and during the last year a small amount from Rhodesia, both places being a long distance away it develops a difficult shipping problem. The domestic supplies are low, as compared with the Caledonian and Rhodesian. There are possibilities of developing or increasing the domestic supply. We took the question in hand as to what could possibly be expected from this country by way of development and increase in the United States, increase from Canada, and increase from ports nearer at hand than New Caledonia, such as the Cuban and Brazilian, and figured what could be expected for the year. We also figured the total demand for the year, taking that demand on the basis of the figures presented by the Ferro-Alloy Committee, which is made up of the people principally using the chromite. We also have taken into account the present stocks. Adding together all the available sources here in the Western Hemisphere, plus the stocks, it has been our judgment that after certain cargoes now in

transit were received no further importation for the year would be necessary, which would mean a very considerable dead-weight saving of tonnage. In short, we figure for the year a total of 175,000 tons, roughly, or the equivalent of 50 per cent chromite available from the various sources I have named, against a demand which is estimated by the Ferro-Alloy Committee at 126,000 tons, but which may be more or less, it is very difficult to state that exactly. In our judgment there ought to be taken from the demand of 146,000 tons a considerable amount of chromite which heretofore has gone into factories as furnace liners. Different plants are already substituting other materials for that, and there is no reason why everyone should not do so.

We have, therefore, felt that it would be safe, after the cargoes in transit are in, to cut off the chromite. In that decision, however, we are not followed by the Ferro-Alloy Committee, the principal users, who feel that the situation is very critical and are making very strenuous representations at the present time to get the embargo taken off in order to bring in more chromite from New Caledonia. The matter was discussed at length at the meeting of the Ferro-Alloy Committee April 27, at which we were present, and it was agreed by the Ferro-Alloy Committee, in view of certain facts which we brought up, which had not yet been fully considered—in other words, facts relating to the possibilities of introducing economies and making further substitutions of low for high grade and taking into a little fuller account various stocks in this country not classed in the high grades, but lower grades of ore, that they should present new figures and really figure their requirements for the year after taking into account all those factors, and we agreed at that time that when the figures came in that seemed to be satisfactory to reconsider the chromite question.

The entire purpose, I might say, in putting on these embargoes is simply to take off the excess, and it was not the purpose to take off any commodity to an extent which would vitally damage any essential industry, and any small shortage in chromite would damage the steel industry. It is a very essential commodity.

The CHAIRMAN. Your object in taking off any was simply to save shipping for other purposes?

Mr. LEITH. Simply to save shipping for other purposes, just so far as we can make any in this country. Just to continue that question: There is great pressure brought to bear to bring other commodities from New Caledonia and Calgary, wheat, and during the last month or so instances have come up where certain shipments were on hand and ships were ready to sail asking for orders, and the question came up whether they shall put on chromite or wheat. Mr. Hoover has been extremely urgent that those ships be loaded with wheat. Every pound of chromite loaded in those ships means so much less wheat. There are not enough ships to carry both.

The CHAIRMAN. Take the importation of manganese, if that is cut off what will take its place, say, from Brazil?

Mr. LEITH. From Brazil there are several essential commodities. I am sorry I have not the complete list of Brazilian importations here. We have made up a priority list of all materials, including foodstuffs, from Brazil, but we have coffee and rubber as the two principal competing commodities with manganese, and a small amount of

chromite, perhaps 25,000 tons of chromite. All of those essential things are with not enough ships to carry them. There is a shortage now in the movement of the minimum amount required for any one of those commodities.

The CHAIRMAN. From your investigation, do you find we have manganese in this country?

Mr. LEITH. Yes, sir.

The CHAIRMAN. But we do not produce rubber or raise coffee to any extent?

Mr. LEITH. No.

The CHAIRMAN. Therefore, we absolutely need those two commodities, and your idea is to save the shipping for the commodities that are not raised in this country and produce the manganese in this country which can be produced here?

Mr. LEITH. Yes. In addition to that, however, I may say steps have been taken to diminish the importation of rubber where it was not used for essential purposes and to cut a certain percentage off the importation of coffee.

Senator SHAFROTH. Since we can build a ship in 27 days now, is that not going to relieve the situation a little?

Mr. LEITH. I can not answer that question in any definite way, except to say that after working with the ship controller on the definite assignment of ships for this entire list of mineral products, I am finding how little he is in position to promise even for a few months ahead; therefore I am personally rather skeptical about any great relief for some months.

The CHAIRMAN. How much chromite was produced in the United States in 1917?

Dr. MANNING. Thirty-two thousand six hundred and eighty-two long tons.

Mr. LEITH. That included Alaska and Canada?

Dr. MANNING. No; that does not include Canada.

Mr. LEITH. We expect the California chromite to increase by at least 25 per cent, and we expect the Canadians to produce 10,000 to 20,000 tons more than they did last year. The Canadian War Trade Board is interesting itself very actively to stimulate that to its maximum extent.

Mr. MACBETH. What about Oregon?

Mr. LEITH. Efforts are being made to get them going.

Mr. MACBETH. Professor, in your investigations into the possibilities of tungsten in this country, did you not ascertain there were numerous deposits in California, in Colorado, in Idaho, and in Nevada that could be produced to supply all the tungsten for this country, providing a fair price was placed on the material?

Mr. LEITH. Yes; we had reports on that matter both from the Geological Survey and the Bureau of Mines to the effect that there were many deposits and that there were supplies that could be brought out with a rather considerable increase of price.

Mr. MACBETH. I am aware in Idaho to-day of six deposits of tungsten that are not being worked, and also a number in Colorado and in Nevada that are not being developed owing to the low price. The trouble is there is a combination of dealers in New York that handle the tungsten ores that have driven down the price to such a low figure that it can not be produced under present cost conditions. I think

it is about $25 now for 60 per cent of tungsten. If that price were increased $10 I believe I can show you that you would have all the tungsten you desire. It is simply a question of price.

Senator SHAFROTH. Provided it were guaranteed?

Mr. MACBETH. If we can get it, Nevada, Colorado, Idaho, and California would give you all the tungsten required in this country.

Mr. LEITH. May I make a statement in reference to that?

The CHAIRMAN. Certainly.

Mr. LEITH. We fully realized that fact when we studied this question, and we looked around to see if there were any agency on hand that could take that matter up and get the price fixed and get it stabilized so that anybody would be in a position to go to the miner and say, "Here, go to it"; and in the absence of any such agency we have to let the ships continue to carry the tungsten from South America.

Mr. MACBETH. Could not the Government say, "Here, we require so many thousand tons of tungsten ore; what price will you get it to us at?" Just advertise to that effect in the western papers and you will get all the tungsten you want.

There is one other question I should like to ask you. You are aware, are you not, of the large deposit in Pennsylvania, which is owned by the Tyson family and who were the largest producers of chromite in this country prior to the Civil War? Our Representative in the House the other day, when this measure was under consideration, made the statement, and I believe he based it on a report made that that deposit in Pennsylvania would furnish all the chromite the United States required, could be made to furnish all the chromite we required. Do you know of that deposit?

Mr. LEITH. I do, and we had reports from the Bureau of Mines and the Geological Department and outside experts. There was a case where rather optimistic statements were made, and I looked into the situation and found it such that we did not think it safe to figure on any very large increase from that property in the immediate future. I think your statement is a little optimistic about it.

Mr. MACBETH. I have given you the statement made by our Representative in Congress on the floor.

Mr. SMITH. May I state regarding the production of chromite last year, we have later figures; for the first quarter of 1918 I understand the production was about 12,000 tons, which you see would be somewhat of an increase over last year's production, and this was really low, because of bad weather in the mountains, and the estimate for the second quarter of 1918 is 26,000 tons, making 38,000 tons for the first half of 1918, as contrasted with 42,600 tons for the whole of 1917. It is simply another case where the production is coming up.

Senator SHAFROTH. Professor, I want to ask you what are the uses to which chromite is placed?

Mr. LEITH. Steel hardening.

Senator SHAFROTH. Somewhat the same as tungsten?

Mr. LEITH. Yes, sir; the chromite figures largely on Government specifications on ordnance and other purposes for which hard steel is necessary.

Senator SHAFROTH. That is the same as chromium, described in the bill?

Mr. LEITH. Yes.

The CHAIRMAN. Director Smith, while the production has increased the use has also increased, has it not?

Mr. SMITH. Oh, yes; the demand is increasing.

The CHAIRMAN. Much greater now than it was?

Mr. SMITH. Except as Prof. Leith says, in the cases where they are substituting other materials for the refractors.

Mr. LEITH. You see there are various uses of the chemical trades: in each one of them there are certain possibilities for economies and for substitutions and for eliminations of certain nonessential uses. They all prefer to use high-grade material if they can get it; the trade has been built up on high grade, and they hesitate to use any more low grade than absolutely necessary, yet we have evidence from various expert sources that it is going to be possible to get on to very much lower grades in ore and also effect certain economics. It will be possible, too, to substitute other materials for chromite in refractors which will save considerable tungsten. A great deal of chromite goes into the paint trade. Some of the War Department specifications involve chrome in the paint, when, as a matter of fact, some of the experts say they might just as well specify something else for those particular purposes. There are many nonessential uses for it. I mean relatively nonessential—not war uses. A great deal goes into hardening automobile parts and those things, and steps are being taken to cut down those commodities, and it is pretty hard to sum up the total and get a judgment as to what the exact demand is going to be.

Senator SHAFROTH. You say in tanning?

Mr. LEITH. Yes; in dyes and tanning. There is a considerable amount of lost chromide in the tanning industry, the stuff is run off from the refuse, and steps are being taken now by certain of the companies to recover that chrome. Furthermore, there is chrome that has been lost in certain of these ores that come out of the smelters down here at Sparrow's Point. Slags have gone off into the water, and experiments are under way now to see if they can not utilize that chrome, and we were told at the meeting of the ferroalloy committee last week that experiments seemed to be successful, and they thought they were going to be able to use a large tonnage of that material, and many things are under way that tend to increase or decrease the demands, making it difficult to get exact figures. The trade itself is more or less up in the air as to just what it can get along with.

The CHAIRMAN. What are your figures on graphite along the lines you have been explaining?

Senator SHAFROTH. And tell us what graphite is used for.

Mr. LEITH. The principal war use for graphite is for the manufacture of crucibles for electric furnaces, and electric furnaces are used in many capacities. The situation there is this: The high-grade graphite has been coming to this country from Ceylon and Madagascar, principally from Ceylon. The graphite from Ceylon is of larger crystallization than the domestic, on the average, and is supposed to bind a little better in making these crucibles, and the manufacturers of crucible steel like to use it; in fact, they would like to use that almost entirely, and in practice they have not ordinarily cared to substitute any domestic graphite for the foreign to an extent greater than 25 per cent. The percentage varies more or less among

different users. They have secret formulæ, and it is difficult to get at the exact situation. Certain of the users, however, are using a much higher percentage than others, and the Bureau of Standards, which made rather extensive tests, goes on record, in a letter to us, to the effect that they see no reason why the domestic graphite should not be used up to 50 per cent, and even higher, and get good results. Taking into account, then, the domestic production, the stocks on hand, and the possibility of substituting a lower grade of domestic for the higher grade of imported, which seems to be fairly practicable, we recommended only 5,000 additional tons of graphite be imported from Ceylon during the year, and that for three months nothing be imported. That provision was introduced for this reason: The stocks of the foreign graphites in this country are considerable, and the holders of those stocks, who are also the buyers of the domestic graphite, have not been keen on getting hold of the domestic graphite, with the result that there has been a very uncertain and unsatisfactory market for the domestic material, principally in Alabama; and I was told last week—I do not know what the situation is now—that certain important producers in Alabama closed down because of the uncertainty of the market—could not get buyers to take the material off their hands. Others present may have later information as to what that situation is in Alabama to-day. I am advised that it is essentially the same.

Senator SHAFROTH. Crucibles have increased in price enormously, have they not?

Mr. LEITH. Yes, sir.

Senator SHAFROTH. What percentage has that increase amounted to?

Mr. LEITH. I can not tell you.

Senator SHAFROTH. Some one told me that it is 300 or 400 per cent. It seems to me that ought to be an inducement in itself to bring forth a large production.

Mr. LEITH. Crucibles are very closely controlled; it is a very difficult situation. The War Industries Board has taken the matter in hand to see that those things are distributed properly. We estimated that after the three months the stocks will be down and there ought to be some spontaneous movement on the part of buyers to get this domestic graphite moving; but at the present time there has not been any marked increase in domestic production. But as to the capacity for domestic production there is no doubt at all; it has been reported again and again by the Geological Survey and the Bureau of Mines and other agencies.

The CHAIRMAN. Have you the figures there as to how much graphite we imported in 1917?

Mr. LEITH. We imported in 1917 and 1916 about 25,000 tons. The total for this year, including the amount that has come in prior to the placing of the embargo, plus the 5,000 tons which we are going to allow to come in after three months, will be 12,500 tons. In other words, the cut is 50 per cent.

The CHAIRMAN. And we must arrange to have that produced in this country in order to make up the difference?

Mr. LEITH. Yes. The supply is here, beyond any question; it is just a question of bringing it out.

The CHAIRMAN. You have given this entire matter very careful consideration, have you not?

Mr. LEITH. So far as these matters are concerned, yes; not the details of the bill, if that is what you are referring to.

The CHAIRMAN. But in your opinion there is some such legislation needed as we now have under consideration, is there?

Mr. LEITH. In my opinion, yes; some legislation is necessary. I may say this: That in taking up each of these commodities, each of them developing new and separate problems, we have been confronted in almost every case as to how the situation could be handled, whether this agency or that agency could do it, and how they would do it. There is confusion. People have come to us and said, "You have cut off this material, now what will the Government do about standardizing the price or allocating or helping us open this railway? Will they maintain the situation long?" We have simply had to say that we do not know. There are a lot of people thinking about it, but it is nobody's primary business; it is our idea that it must be the primary business of some one agency to follow this thing up. There is a great deal being done by the present governmental agencies, but in our judgment not enough, and our thought is that legislation along the line of this bill will have the effect of centralizing the control and putting in some one agent's hands the power to follow these things up and say yes or no in a given situation. As to what particular action they will take, whether it is wise in this or that commodity to save in price, or guarantee or allocate, I can not answer offhand. That is a separate and distinct problem for each of these minerals.

The CHAIRMAN. Instead of taking up each one of these minerals separately, Dr. Manning, you could furnish us with a statement for the record as to the importation and the domestic production, showing the difference?

Dr. MANNING. Mr. Chairman, the Director of the Geological Survey has that statement made up very comprehensively, and can furnish it and put it in the record.

Senator SHAFROTH. Mr. Galbraith, do you want to ask the witness any questions?

Mr. GALBRAITH. No; I do not.

The CHAIRMAN. Dr. Manning, do you?

Dr. MANNING. No.

The CHAIRMAN. Mr. Leith, I wish you would go into the matter of ship shortage and the necessity for making the orders that you have referred to, limiting the importation of these metals and ores, and why the orders were made?

Mr. LEITH. In answer to that, I want it understood that I can not speak with authority as representing the Shipping Board on final figures. My touch with the situation is this, that through the statistical division I have known of the calculations, I have seen the tables, I have seen what is possible by way of eliminating commodities. I have been told what some of the military demands are. I have been in touch day after day with the ship controller's office in the separate allotment of ships for each one of these minerals and have discussed the matter with the ship controller and others, and the fact of the situation which we are acting upon is a fact recognized by all people connected with the Shipping Board that there are not

enough ships even to carry these minimum tonnages, and at the same time even approximately keep up the military program. In other words, we have been assured time and time again that we must cut to the bare bone, and after we have cut to the bare bone they know in advance they are going to be short. Take the west coast of South America, for example, from Chile we have two or three essential commodities coming up there, nitrate, which we must have for munitions, we have refined copper and tin, it is one of the principal sources for tin. There has not been a time in the last three or four months when there have been ships enough with all the efforts that the Shipping Board and the ship controller could put into it to bring any one of those shipments up to the minimum that seemed to be required. The nitrate schedule is now behind, the tin schedule is behind, in fact, everything essential is behind, and the ship controller states flatly that he does not see the ships in sight to catch up.

The CHAIRMAN. We will hear Mr. Carnahan.

Dr. MANNING. I should like to make a statement while Mr. Carnahan is here. Senator Jones made the statement the other day that he was deeply impressed with the fact that no concern using these minerals in manufacture had appeared before the House. Mr. Carnahan, who is vice president of a rolling-mill company, was in the city this morning, and I took the liberty of bringing him up and suggesting to you that he testify regarding the uses of manganese and chrome in the steel industry, as to whether or not the low-grade manganese ores in the United States could be used as a substitute for the imported ores.

## STATEMENT OF MR. ARTHUR B. CARNAHAN, JR., VICE PRESIDENT THE AMERICAN ROLLING MILLS CO., MIDDLETOWN, OHIO.

The CHAIRMAN. To what extent, Mr. Carnahan, can the low-grade manganese ore be used as a substitute for the high-grade imported manganese ore?

Mr. CARNAHAN. I would not care to state that offhand in figures without a little more careful consideration, but would say that it can be done to a very considerable extent. Manganese in the manufacture of steel is used when smelted chiefly in two forms—ferromanganese, which customarily carries 70 to 82 per cent manganese, and spiegel, which carries approximately 20 per cent. To a certain extent ferromanganese in percentages between these two figures has been used. In the manufacture of basic open-hearth steel, which is the product producing the greatest tonnage to-day, usually the 80 per cent ferromanganese is much more preferable. However, if we had to use, say, 65 per cent ferromanganese we would get along nearly as well. I believe from those remarks you will see the possibilities. For instance, suppose that we preferred to use 80 per cent, but we could not get it, and we were compelled to use, say, 50 per cent of the 80 per cent, an amount of the lower grade that would make up the manganese content. That could be done in a great many cases with good results. But at the same time it would not be possible to boldly substitute 20 per cent ferromanganese for 80 per cent; in many cases it would be impossible. I believe that will answer what you desire.

The CHAIRMAN. Is Government control in your opinion necessary to bring about this substitution?

Mr. CARNAHAN. The Government control and Government cooperation with the manufacturers is necessary, and more specifically Government control, so that it will compel the manufacturers to do that which is for the best interests of the country as a whole. The average manufacturer must follow the lines of least resistance if he wants to keep his costs down. He naturally will use the material which will give him the least trouble and give him the lowest cost. If the Government sees the necessity of a certain shift from that, it is better that the Government should have the power to insist on it.

The manufacturers as a body, I am sure, are very, very anxious to do what the Government wishes them to do, but they feel that they should do it as a body and that the burden should not be thrown on one particular class or division of that manufacturing total. Therefore if the initiative were centralized in the Government I feeel that results would be gotten much more quickly, and I feel very certain that manufacturers would cooperate splendidly.

The CHAIRMAN. This bill contains a licensing feature. Have you examined that part of the bill?

Mr. CARNAHAN. I have not had time to read the bill through. I have read the part that you refer to.

The CHAIRMAN. Do you think the licensing feature of the bill desirable?

Mr. CARNAHAN. I do.

The CHAIRMAN. Why?

Mr. CARNAHAN. Because with this feature the Government has the power to very quickly and readily enforce that which is needed. In other words, the power is in a thoroughly concrete form.

The CHAIRMAN. You are familiar with the conditions existing now relative to manganese ores, are you not, and the production in this country to a certain extent and the importation thereof?

Mr. CARNAHAN. I am reasonably so. In the first place, I am not a mining man, I am a metallurgist. I have been concerned in the use of the smelted ore; that is, of the product which is obtained from the smelting of the ore. I am thoroughly familiar with the use of manganese in the form of ferroalloys.

The CHAIRMAN. Do you believe the production of manganese ores can be stimulated in this country by guaranteed prices such as provided for in this bill?

Mr. CARNAHAN. I feel sure it can.

The CHAIRMAN. You think it can?

Mr. CARNAHAN. I feel satisfied it can be.

Senator SHAFROTH. I should like to ask a few questions. You believe in fixing a system of minimum prices for these minerals, do you, by a commission or bureau of mines, or somebody that can understand their value and cost of production?

Mr. CARNAHAN. I believe that price fixing in general should not be resorted to unless necessary.

Senator SHAFROTH. I am speaking of minimum price. I am heartily in favor of minimum price fixing, and you agree to that?

Mr. CARNAHAN. I absolutely agree to it.

Senator SHAFROTH. Now as to the licensing feature, one of the objections, at least of that or at least it has proven so under the bill

concerning wheat price fixing, that it has been used in that instance as a means of fixing the maximum price, and the question is whether you believe, and if so why, that the fixing of a maximum price would be a good thing?

Mr. CARNAHAN. I understood you to say a minimum price.

Senator SHAFROTH. You agreed with me on the minimum, I agree with you that the minimum price ought to be fixed, but in a maximum price I feel there is great danger that instead of doing the thing that is expected to be done, the result will be to the contrary, as it has been in wheat. We have got wheat so low contrasted with the other cereals that now the demand has been on wheat for other purposes than food, even feeding it to stock, and that, of course, consumes it much to the detriment of supply, and makes the raising of wheat less remunerative than corn, barley, or rye. Now I want to know what reason there is for fixing, either by a system of licensing or price fixing itself, a maximum price at which these minerals can be sold?

Mr. CARNAHAN. This whole subject is a very complicated one. In some cases I believe the maximum price should be set; in other cases, not. It depends upon the commodity you are dealing with and the attending circumstances. My reason for believing in the licensing feature is that it would give the Government the necessary power to carry out a policy which would be for the good of the country, which at present is at war, and also looking forward to the post-bellum period, at least for a certain length of time. Naturally I hesitate to speak much on price fixing, because it is a comparatively new thing in this country. But the principle is right, because it is necessary.

Senator WALSH. How long after the war would you like to see the thing continued?

Mr. CARNAHAN. I would not care to make a statement on that, because there are so many other people better posted than I on that subject. I would not care to make a statement on that.

Senator WALSH. What makes you feel that the price-fixing feature should be continued after the war at all?

Mr. CARNAHAN. Well, to continue the price fixing up to the end of the war and then chop it off abruptly might cause a great deal of trouble. I would not like to make any statement as to how long it should be continued at all, whether for a month, a year, or two years. I do not feel able to make a statement on that that is worth while.

Senator WALSH. Could you think of some one who could give us a better judgment?

Mr. CARNAHAN. I think there are men in this country that have given that a good deal of thought that could make a statement infinitely more valuable than any remark I could make, because I do not feel able to make a statement that would be at all authoritative.

Senator SHAFROTH. If they should happen to fix the maximum price at too low an amount, it would discourage production, would it not?

Mr. CARNAHAN. Yes; it would.

Senator SHAFROTH. That is, they would not go into the enterprise unless they saw a margin in it themselves on the price fixed?

Mr. CARNAHAN. In price fixing?

Senator SHAFROTH. Yes; in price fixing. Now, if they were to fix a very high minimum price for these things it would stimulate production very much, but if the Government stood ready to pay the high price, why it would be a great drain on the Treasury, would it not?

Mr. CARNAHAN. In other words, you must rely on those in authority to use good judgment and cooperate properly with the various lines of trade. If the Government cooperates with the various lines of trade, they will get good cooperation and the price, when set, should be a price arrived at by a thorough getting together.

Senator SHAFROTH. If you fix a maximum price on any one article, you must fix a maximum price on all of those articles that are used as substitutes, must you not?

Mr. CARNAHAN. Naturally, in the production of any article there is a number of elements that come in, and to fix the price on one part and ignore others would not be fair, but necessarily there are bound to be limitations. You will be able to go just so far and probably no further without—that is, with the light we have on the subject at the present time.

Senator SHAFROTH. Is it not the safest way to arrive at the maximum price, to leave it to supply and demand and then attempt to get after those people who are hoarding or who are, for speculative purposes, trying unduly to raise the price, and also leaving it to the war tax to make them yield up their profits if they make such an enormous profit?

Mr. CARNAHAN. I do not believe that supply and demand will give adequate results. As I understand this proposition we are in, there is need of quick results. The law of supply and demand ultimately works out things pretty well, but it may take a long time to do it. But the need is practical and instantaneous help.

Senator SHAFROTH. Yes; but that relates more to the production, does it not, so as to induce the production, and that is by the fixing of a minimum price, which everybody seems to concede is a very proper thing to do in order to produce quick production results?

Mr. CARNAHAN. Did you ask me a question?

Senator SHAFROTH. Yes; I asked you whether that quick result you were after should be made by fixing a minimum price instead of a maximum price?

Mr. CARNAHAN. Naturally, stimulation of output is brought about by offering a price that will induce the consumer to produce his wares of his goods, and if the price is set too high, he will be overstimulated; if it is set too low, he will be understimulated. That is about all I can say.

Senator JONES of New Mexico. And in a mining proposition it is very difficult to find out what proper stimulation may be, is it not?

Mr. CARNAHAN. It means that proper investigation must be made and the facts must be arrived at.

Senator JONES of New Mexico. How could you go about arriving at the price which is necessary to induce a man to open up a new manganese mine?

Mr. CARNAHAN. Naturally, the cost of production must be given consideration.

Senator JONES of New Mexico. How can you arrive at that with any degree of certainty?

Mr. CARNAHAN. By means of experts. All manufacturers have to arrive at those conditions.

Senator JONES of New Mexico. I suppose all of us around here have had more or less experience in prospecting and sinking shafts and running tunnels and that sort of thing, and do you think that anyone, no matter how skilled, could estimate within any reasonable range the cost of opening up and making a productive manganese mine?

Mr. CARNAHAN. A good many men would undertake to do it.

Senator JONES of New Mexico. Would they not do it, allowing a great margin for safety?

Mr. CARNAHAN. Well, in all estimates all experienced mining men—and, in the first place, I will state that I am not a mining man, but I have been thrown against the industry—you always have to allow for a certain margin of safety and allow for certain contingencies, because so many things will happen.

Senator JONES of New Mexico. In the first place, it is impossible to tell how much ore you would reach when you got to it, and it is impossible to tell the richness of the ore after it is reached, and are there not so many contingencies in such a mining proposition as to make it absolutely impossible with a degree of certainty the cost of the ore after you have obtained it?

Mr. CARNAHAN. No; I don't think so.

Senator SHAFROTH. It would vary much as between different mines, would it not?

Mr. CARNAHAN. No two mines operate at the same cost.

Senator SHAFROTH. If you would fix a general price, some mines would have to close; others could make money by it; it depends on how high you fixed it, then?

Mr. CARNAHAN. If you fix it too low, certain mines could not operate. If you fix it higher, other mines could come in. The same question that pertains to mining pertains to all lines of manufacture. No two manufacturers manufacture at the same cost; one manufacturer will have a certain advantage the other will not have.

Senator WALSH. Let us try to be practical about this thing. Referring to the bill, which of these metals referred to in the bill do you feel ought to be covered by a maximum-price provision; that is to say, which of them could be subjected to that depressing influence without affecting the necessary supply?

Dr. MANNING. Senator, I should like to say that Mr. Carnahan came up this morning and has not had an opportunity to examine this bill very carefully, and I asked him to come up to discuss really a proposition as to whether or not the steel industry, which he represents—he is vice president of one of the big steel concerns—to discuss the technical proposition whether the low-grade manganese ores we have in this country could be utilized in place of the high grade.

Senator WALSH. Then, I will withdraw my question.

Mr. CARNAHAN. I hope you will not think I am attempting to dodge anything.

Senator WALSH. You do know about manganese?

Mr. CARNAHAN. My life work has been that of a metallurgist in the iron and steel business.

Senator WALSH. Of course, manganese comes into that?

Mr. CARNAHAN. Yes; it is a most important element with us.

Senator WALSH. Let us take manganese We import about three-fourths of the amount we consume, as I understand it?

Mr. CARNAHAN. I can not say for that. I know we import a large amount. I can not state how much, because I have been the user of ferromanganese. I am not a mining man, understand; I use the manganese as it comes to my hand to use, and we are buyers of ferromanganese. As to the statistics of the shipments of manganese ores into this country, I could not give it offhand.

Senator WALSH. You are a buyer of manganese?

Mr. CARNAHAN. A buyer of ferromanganese.

Senator WALSH. Of ferromanganese?

Mr. CARNAHAN. Yes, sir; in various percentages.

Senator WALSH. Of course, manganese is largely a constituent of ferromanganese?

Mr. CARNAHAN. Yes, sir; 80 per cent, approximately.

Senator WALSH. Now, do you want to authorize some department of the Government to fix a maximum price on manganese?

Mr. CARNAHAN. I would prefer not to answer that. I have not given the matter any thought. You understand, I just came into Washington this morning and have not read this bill through.

Senator WALSH. That is hardly a fair way to put the question, and I will withdraw that and put it this way: Do you believe it would be in the public interest that power should be given to fix a maximum price an manganese?

Mr. CARNAHAN. I do.

Senator WALSH. Why?

Mr. CARNAHAN. That power should be given?

Senator WALSH. Yes.

Mr. CARNAHAN. Because it would centralize control and help us to carry on the war more effectively.

Senator WALSH. As to centralization and control, we understand that the control would be centralized by another provision of the bill which would authorize the issuance of the licenses to those who either produce locally or import and the allocation of the product by some governmental agency.

Mr. CARNAHAN. Yes.

Senator WALSH. That would not affect the price, you see. I am not asking you whether it is advisable to have the product allocated by some Federal agency; that is another question. My question now addressed to you is, Do you thing it advisable in the public interest to put it in the power of some one somewhere to fix the maximum price?

Mr. CARNAHAN. Pardon me. Where is the provision that states that?

Dr. MANNING. It was eliminated from that bill.

Senator WALSH. That is, the price-fixing provision?

Dr. MANNING. Yes.

Mr. CARNAHAN. Do I understand the original bill had it in, and in this bill it has been eliminated?

Senator WALSH. Yes.

Mr. CARNAHAN. You understand that I am at a big disadvantage, not having read the original bill. I might state I have been in Florida for the past 30 days and I have not followed this, but I believe it would be to the public interest to have it in the power of the Government to fix the maximum price, if it was considered necessary. Have I answered the question?

Senator JONES of New Mexico. Do you know of any one of these metals where a maximum price ought to be fixed now?

Senator WALSH. I understand he does not know anything about any of them except manganese.

Mr. CARNAHAN. I do not want to talk except on manganese.

Senator JONES of New Mexico. Do you think there ought to be a maximum price put on manganese now?

Mr. CARNAHAN. I do, sir.

Senator JONES of New Mexico. I mean, separate from the power to do it; if the power exists, ought it to be exercised now?

Mr. CARNAHAN. I am in favor of the power being vested, and later that the department, or whatever division of the Government has that power, to investigate the matter and let them use their discretion.

Senator JONES of New Mexico. That is not quite answering my question. Is the situation such now that there ought to be a maximum price fixed now?

Mr. CARNAHAN. You mean instantly?

Senator JONES of New Mexico. Instantly.

Senator WALSH. Not this instant, you know, but to-morrow or next day or next week.

Senator JONES of New Mexico. In other words, are conditions such in the manganese industry now as to make it desirable to fix a maximum price, not the power to do it, but to do it?

Mr. CARNAHAN. I shall have to answer it in this way: I believe the time will come that we shall have to make a maximum price on a great many commodities.

Senator SHAFROTH. If you fix a maximum price too low then you will not get production, will you?

Mr. CARNAHAN. You will have to raise it.

Senator SHAFROTH. And if you fix it too high?

Mr. CARNAHAN. You get overstimulation.

Senator SHAFROTH. Well, the maximum price, as I understand it, is always that it can not exceed so much, and it only operates to the detriment of production when it is fixed too low. Now, it does not mean as I understand it, when a maximum price is fixed that it shall be sold at that price, but only that it shall not be sold at a higher price.

Mr. CARNAHAN. It may be sold for less than that.

Senator SHAFROTH. It may be sold for less than that, but the minimum price is the other way, the minimum price is that it may be sold for more?

Mr. CARNAHAN. Yes.

Senator SHAFROTH. You think that to fix a low price would be very disastrous to production?

Mr. CARNAHAN. If the price were set too low it naturally would reduce output.

Senator SHAFROTH. Are not the very objects to be attained between a maximum price and a minimum price antagonistic? In other words, a minimum price would encourage production by letting the owner, even at a moderate rate, take the speculative chance of getting ore and consequently would stimulate production, whereas if you have a maximum price he could say with absolute certainty, "I can never get any more than that," and you would have to make the maximum price consequently very high in order to make a producing price?

Mr. CARNAHAN. As I understand the matter, the fixing of prices, which is, as I said before, a new subject to all of us, in the fixing of prices it is done to accomplish certain desired results. If you have a minimum price established that means that the producer is bound to get that much, and if you have a maximum price established, why, he knows he will not get more; he does know he will get at least the minimum and——

Senator SHAFROTH. Between the minimum and the maximum?

Mr. CARNAHAN. Yes. And the setting of the maximum price would do away with certain abuses that might creep in.

Senator SHAFROTH. Would it not make, in the case of mining properties, an almost interminable contest on the part of the owners of the mines, if you were to fix it for a small section or fix the prices on each mine, one owner would continually claim that his profit was too narrow, that he could not afford to mine, and would continually appeal to the Government to change these maximum amounts so that he can be permitted to sell at a price over the maximum price?

Mr. CARNAHAN. As I understand this bill—and I wish to state that I have not read it all through but I simply have a descriptive knowledge of it—the Department of Mines wishes to help the country at war by stimulating domestic production and thereby relieving ships for over-seas trade, so that they can take them for the various purposes in the war for which they are needed so badly.

Senator SHAFROTH. Everybody wants to do that same thing.

Mr. CARNAHAN. Yes.

Senator SHAFROTH. Now, the question is, which is the best way to do it?

Mr. CARNAHAN. Undoubtedly, speaking of manganese, and I wish to speak on nothing but manganese, we know that there are many deposits in this country, and I believe they can be developed, will be developed if properly helped, if proper help is given.

Senator SHAFROTH. The only object of the maximum price is to prevent excess profits, is it not?

Mr. CARNAHAN. Yes, sir.

Senator SHAFROTH. If that is the only object, why can you not reach this by a prosecution of combinations and also by the war tax that would make the man that made the profits yield them up?

Mr. CARNAHAN. You mean why would it not be better to pass the bill with the ability to fix the minimum price?

Senator SHAFROTH. The minimum price only.

Mr. CARNAHAN. And eliminate the maximum?

Senator SHAFROTH. Eliminate the maximum, but put in there anything that will have a tendency to prevent an unlawful combination.

Mr. CARNAHAN. I should like to have the wording of the original bill as it stood.

The CHAIRMAN. Mr. Carnahan, the original bill provided that the President, through the Secretary of the Interior, is authorized and empowered to fix the prices of necessaries, wherever and whenever sold, either by producer or dealer. That clause was stricken out of the bill in the House of Representatives. In other words, that left the price-fixing feature that was in the bill as introduced out.

Senator SHAFROTH. Leaving it to supply and demand?

The CHAIRMAN. There is, however, in this bill authority to allow the administrator of the bill, if the bill becomes a law, to guarantee prices. He can enter into contracts with producers, guaranteeing them for a period not to exceed two years, and fix a certain price for their products. Do you think that the guaranteed-price features of the bill would answer instead of the price-fixing feature which has been taken out?

Mr. CARNAHAN. I much prefer not to answer that without giving the matter a little more consideration. I am at a terrible disadvantage, having only dropped into town here about two hours ago, and I dislike exceedingly to set myself up as an expert when I know I am not.

The CHAIRMAN. These ores mentioned in the bill have different prices, have they not?

Mr. CARNAHAN. Yes.

The CHAIRMAN. It would not be a hard matter to fix a price that would be equitable as between all these materials?

Mr. CARNAHAN. It would be hard, it would be difficult.

The CHAIRMAN. Under the guaranty features of the bill, whatever agency or person who carries out the administration of the bill would be allowed on a certain metal to guarantee a certain price, and on another metal to guarantee a certain price. Would that, in your opinion, meet the conditions that exist in regard to all of these metals?

Mr. CARNAHAN. There are 39 metals here and each one has its own troubles, and we must consider that in each mine there are various conditions.

The CHAIRMAN. For instance, one man is right on the railroad?

Mr. CARNAHAN. Yes, sir.

The CHAIRMAN. Another man is 40 miles away from a railroad and has all the freighting and hauling to do to get his metals to the shipping point. Now, under the contract feature of the bill by which the administrator may guarantee the price, those conditions could be all taken into consideration, could they not?

Senator SHAFROTH. If you want production?

Mr. CARNAHAN. Yes.

The CHAIRMAN. The administrator of the bill or the agency that would make these rules and regulations could say to the man far away from the railroad, "We will give you one price," to the one on the railroad, "We will give you this price," but eventually all of them would get practically the market price or whatever was necessary to stimulate the production when it reached the smelter, do you not see?

Mr. CARNAHAN. Yes.

Senator SHAFROTH. And profits of some would be large and the profits of others would be light?

Mr. CARNAHAN. The very point that you have been bringing out has already come up in connection with coal. For instance, certain mines make a fair profit at the price and other mines can not get a new dollar for an old one.

The CHAIRMAN. You understand we are trying to keep away from the coal situation as far as possible?

Mr. CARNAHAN. Yes.

Senator SHAFROTH. It has not been the most satisfactory thing to the Senators, at least judging from the discussion that has been going on.

The CHAIRMAN. If we could fix a maximum price, the man that is better located with his mine and for shipping facilities, and so forth, would get more for his metal than the man who might be unfortunately located, being further away from the read?

Mr. CARNAHAN. Yes; he would.

The CHAIRMAN. Under the guarantee of the bill the administrator could regulate that by guaranteeing a price which would cover the hauling, freighting, and so forth.

Mr. CARNAHAN. In other words, he could guarantee f. o. b. cars.

The CHAIRMAN. Yes, and they would all be treated alike.

Mr. CARNAHAN. That would be much more equitable. As I have stated before the question of price fixing is a very, very complicated subject, and I would prefer to have some other person handle that.

The CHAIRMAN. You realize, do you not, that there is quite a difference between the agricultural interests and the mining industries of the country?

Mr. CARNAHAN. Yes.

The CHAIRMAN. And that it is a hard matter to place both of those interests on the same level and treat them under a like bill?

Mr. CARNAHAN. Yes.

The CHAIRMAN. Dr. Manning, have you any questions that you would like to ask?

Dr. MANNING. No, sir.

Mr. WHITE. Could I state a situation and ask a question?

The CHAIRMAN. Certainly.

Mr. WHITE. The situation as I see it, in view of the fact that we obtain 40 per cent or more of our ore supply from Brazil, while we assume that we can get those materials from domestic sources, there is a good deal of uncertainty on the part of the consumer as to where he is going to get his supply of manganese ore. Under the circumstances he is probably going out into the open market and will try to get hold of manganese deposits or supplies of ore, and you would have a situation which might develop into what you would call a run-away market in the manganese situation.

Now, Mr. Carnahan, as a consumer, the question I want to ask you is this: A minimum price in this bill is for the purpose of guaranteeing conditions and getting production; the maximum price is for the purpose of protecting the consumer from the price going too high. Under the minimum price, you are going to get so much, and that is going to be enough to get you to produce this material. The maximum price says that prices shall not go beyond a certain point, because that would be unfair to the consumer. Mr. Carnahan's price on steel may be fixed under certain conditions and the price of his

raw material under control and the price of his finished product fixed. The question I want to ask is this as to the maximum price, as to whether there might be the possibility of a run-away market and the advance of prices of raw material beyond the point necessary to get production. That is the question, whether you can consider a maximum price. I want to see from the standpoint of the consumer some protection against an extreme run-away market, a maximum price not too close, but with some upward limit. We are paying to-day, say, $50 a ton for high-grade manganese from Brazil. You might say that a maximum price of $50 might be too low; it might discourage production. But suppose you said it should not go above $60 or $70; is it not desirable to have some upward limit to control a run-away market situation? That is the situation which the consumer is facing, and the interests of the consumer in this end of the bill is to see that prices do not go beyond the point where it is necessary to stimulate production. Prices may have been raised to some extreme because of time limit or due to an embargo being placed on the market, and the principal question is whether you will leave that situation uncontrolled from the consumer's standpoint, and consequently may have a run-away market, which may develop, and there are good indications it is starting to develop at the present time.

Mr. CARNAHAN. I think there should be an upward limit placed.

The CHAIRMAN. Have you found that that condition exists with the producer as stated by Mr. White?

Mr. CARNAHAN. I am in accord with the statement Mr. White just made.

The CHAIRMAN. Does not that condition exist more with reference to the broker than the producers? Does not the broker buy in these materials and hoard them and hold them until he gets what price he wants, and is not the idea to get some legislation that will allow the Government to control that situation?

Mr. CARNAHAN. That is the idea.

The CHAIRMAN. As I understand it, I may be mistaken, the broker will go out and he will contract for, say, all the manganese, and the producer does not get anywhere near the price that this broker will get, and he hoards this metal, and you have to go to him as the consumer to buy the metal that you need, and you pay a big price for it, and the producer has not been protected?

Mr. CARNAHAN. That happens sometimes and sometimes it does not happen.

The CHAIRMAN. That happens largely, does it not, in these matters in connection with ores?

Mr. CARNAHAN. Of course, in the steel industry there are a large number of plants that make their own ferro-manganese, control their ores, buy part of it. Others buy their ores entirely and smelt them. Others buy the ferromanganese when made. The firm with which I am connected is in the latter class; we buy the ferromanganese when made. We naturally are at the mercy of the price asked us by the broker.

The CHAIRMAN. Now, this bill would allow the Government to go straight to the producer and arrange for the purchase of the ores that he produces, and the Government then will distribute these ores

to the consumer in the quantities needed by the consumer. Is that feature of the bill, in your opinion, a good feature?

Mr. CARNAHAN. I believe it is.

The CHAIRMAN. If that is all, we will adjourn until 10 o'clock to-morrow.

Dr. MANNING. I should like to know whether Mr. Day, who is here, can wait over to appear before the committee.

The CHAIRMAN. I understood Mr. Day would be here indefinitely.

Mr. MACBETH. I should like to make a statement replying to Mr. White. The producers of one of the metals have been informed by the War Industries Board that when a runaway market is permitted in that metal that a price would be fixed on the metal. Now, if it is possible to fix a price on one metal, it would be very easy for the War Industries Board to fix a price on manganese, if there is any danger of a runaway market.

Dr. MANNING. I think I should like to reply to that. This whole bill is addressed to war buyers. The only power they can exercise is through the Secretary of War and the Secretary of the Navy. They have no power to purchase for the private industries of this country or to fix prices except by voluntary agreement, and Mr. Hoover and Mr. Baruch both stated they fixed their prices up to 95 per cent with the producers in a harmonious manner, but there is another 5 per cent there that ought to be controlled.

Mr. MACBETH. This bill states this: "To provide further for the national security and defense."

I understood this was a war defense measure, a war emergency measure, and had nothing to do with our consumers' requirements.

(Whereupon, at 12.15 p. m., the committee adjourned until Tuesday, May 7, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

**TUESDAY, MAY 7, 1918.**

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met at 10 o'clock a. m., pursuant to adjournment, Senator Charles B. Henderson presiding.

Present: Senators Henderson (chairman), Shafroth, Jones of New Mexico, Ashurst, and Sterling; also Mr. George Otis Smith, Director Geological Survey.

## STATEMENT OF MR. WALTER RENTON INGALLS, MINING AND METALLURGICAL ENGINEER AND EDITOR OF THE ENGINEERING AND MINING JOURNAL.

The CHAIRMAN. Will you please state your full name, residence, and business?

Mr. INGALLS. My name is Walter Renton Ingalls; my residence is New York; I am a mining and metallurgical engineer, and am editor of the Engineering and Mining Journal.

The CHAIRMAN. How long have you been connected with the journal you speak of?

Mr. INGALLS. With the Engineering and Mining Journal, I have been its editor for 13 years.

The CHAIRMAN. You are familiar, are you not, with the bill that passed the House of Representatives to encourage the production of certain ores and metals?

Mr. INGALLS. I am very familiar with the bill that was introduced in the House, and I followed most of the discussion in the House. I had previously appeared before the House Committee on Mines and Mining.

The CHAIRMAN. You testified, did you not, before that committee?

Mr. INGALLS. Yes, sir; I testified before the House committee, and I subsequently followed the discussion through the Congressional Record, or most of the discussion. I am not, however, familiar with the bill as passed by the House except by verbal information and newspaper reports. I understand in a general way that there were certain important alterations made in the House.

The CHAIRMAN. You understand that the rate-fixing features in the House bill were eliminated in the House, do you not?

Mr. INGALLS. Some of them. I understand that the provisions for making maximum prices, the restrictive features, were eliminated, but it is my understanding that the provisions for guaranteeing minimum prices in certain cases remain. Am I correct as to that?

The CHAIRMAN. Yes.

Mr. INGALLS. Have you examined what is known as the third confidential committee-print bill of this committee—the Senate committee?

Mr. INGALLS. Yes.

The CHAIRMAN. I wish you would state, Doctor, in general, your opinion of the two bills—the one that has passed the House and the confidential committee-print bill.

Mr. INGALLS. Perhaps I should best begin by expressing my opinion respecting the theory of the legislation that is contemplated. I think that legislation such as is described in the title of the bill would be commendable. Manifestly it is important that our country should do everything possible to encourage an increased production of those minerals of which there is a shortage in supply or of which there may be a shortage. I am not, however, quite sure of all the premises on which this idea of legislation has been based. If it be the idea to obtain in this country, by production within our own confines, all of the substances that we need and have been heretofore importing, there is really very little room for argument.

If, for example, it were necessary to obtain in this country supplies of tin and platinum, which do not exist here in important quantities so far as known, there is no power, there are no measures that are outlined in these bills that would be any too great to get those things; even with far greater powers than have been outlined in these bills, it is my personal conviction that those things would not be obtained at all, certainly not during any probable course of this war. It is necessary, therefore, to consider seriously, when people talk about excluding importations in toto, whether they really mean to do anything of that sort, and whether it would be wise to attempt to do any such thing. Personally I do not think that it would be either wise or feasible. We should far better continue to get our tin and our platinum from foreign countries than to institute uneconomical measures to get them at home. However, in my conversations with gentlemen who have been interested in framing this legislation, it has seemed to me that there have been certain minerals that they have had particularly in mind, namely, manganese ore, chrome ore, pyrites, and graphite. I am not so sure that in any of those cases the situation is so desperate as sometimes we are told, nor am I sure that it would be desirable to exclude altogether the importation of those minerals. But granting the premises that the domestic supply of those minerals is very short, is very scanty, and that it is necessary to do something to promote the supply, let us consider what measures are contemplated in the bills that are before us.

The bill that was originally introduced in the House embodied several ideas. There was, in the first place, the regulatory idea; in the second place, the price fixing idea; and in the third place, the idea of stimulation of production. In the same bill, therefore, it was aimed to combine the functions of the policeman, the judge, and the fairy godmother.

The idea of policing an industry is now very repugnant——

Senator SHAFROTH. By policing, do you mean licensing and things of that sort?

Mr. INGALLS. Yes, sir; on the other hand, the friendly guidance of an experienced adviser would be desirable and useful without any

doubt. The idea of price fixing, and especially maximum price fixing, I regard as uneconomic and likely to be mischievous. But inasmuch as that has been excised from the bill as passed by the House, it is unnecessary for me to go into that, Mr. Chairman.

The CHAIRMAN. We would be glad to have you give us your idea and opinion upon that.

Senator SHAFROTH. Because we do not know what the Senate is going to do.

The CHAIRMAN. Because it might come up as to having it restored by this committee.

Mr. INGALLS. I consider that the fixing of a maximum price is inevitably restrictive of production unless the maximum price be fixed so far above what would be a normal market price that really it is no price fixing at all. If the price of a commodity is put at a certain maximum, as, for example, in the case of copper, when it is said not that the price of copper is fixed at 23½ cents, but that 23½ cents shall be the maximum price for copper—it is a deduction of logic, and it is unnecessary to introduce economic considerations at all—that if the price remains at the stipulated maximum, there is not enough of the material to go around. There is not now enough copper to go around, and there has not been at any time since last September, when the maximum price was fixed at 23½ cents, nor has there been any copper sold for less than 23½ cents. At no time since the establishment of that maximum has there been sufficient copper for everybody, and at all times our copper manufacturing industries have practically been rationed. As soon as there is copper a little more than enough, the price will no longer be 23½ cents; it will be something less, how much less will depend upon the extent of the new supply.

I consider, therefore, that the idea of maximum price fixing and restriction of production are practically synonymous, unless the maximum price be above the economic price, as I have said.

The establishment of minimum prices would, of course, have the directly opposite result. The establishment of minimum prices and the guaranteeing of minimum prices would undoubtedly stimulate production. Just what the consequences would be must necessarily be to a considerable extent speculative. This idea has not as yet been tested in this country. We may, however, conjecture from certain experiences what might possibly happen.

Among the minerals that are named in section 1 of both bills is the metal molybdenum, of which one of the important ores is the mineral molybdenite. Some experiences that are going on right now afford some illuminating ideas with respect to what might happen from the guarantee of a minimum price. Until recently the production of molybdenite, which mineral is an ore of molybdenum—a metal used in small quantities in producing certain steels that possess extremely valuable properties—until very recently, I say, the production of this mineral was chiefly a sporadic business. There was not much demand for it and it was produced only in small quantities, a few tons here and a few tons there, by small miners, there being neither an organized industry nor an organized market. The increasing recognition of the valuable properties of molybdenum steel, however, produced a great demand for this casually produced mineral, and the price for it rose to a high figure. Only a few months ago this mineral when concentrated to a high degree of purity realized as high as $2.25 a pound.

Senator SHAFROTH. What is the normal price?

Mr. INGALLS. I do not think there was any normal price.

Senator SHAFROTH. What is the lowest price, then, it has been sold for?

Mr. INGALLS. I can not answer that question, for, as I have already said, previously to the recent demand the business was so sporadic and so casual that it would be difficult to say what was the market price. But during the last year, as I have said, this mineral has actually fetched as high as $2.25 a pound. That very fact interested important mining people in looking for molybdenite, and it was found that it existed in very important quantities in one part of the country and another, so that during the last three months this mineral has been becoming a regular commercial mineral, the product of concerns that can promise to deliver steady and large supplies of it, and for that reason, during the last few months the market for this mineral has been declining. To-day many small producers, who have been supplying the market in a sporadic way heretofore, are wondering why they can not sell their product. The reason why they can not sell it is that large supplies are being offered from regular mines. One of the most important of those mines occurs in Colorado.

Senator SHAFROTH. Where?

Mr. INGALLS. On Bartlett Mountains, near Kokomo.

Senator SHAFROTH. The Denver papers contend that there are great amounts of production up there.

Mr. INGALLS. The developments, I understand, have created a great deal of interest in Colorado. One company has developed there an ore body which, I am informed, actually measures 6,000,000 tons of ore, averaging 1 per cent of molybdenum, with probable ore resources very much greater than that.

Now, such a development, which has been brought about naturally by the stimulus of high prices, has put the mining of this previously rare mineral on the same kind of a basis as our big copper mines are on, and the thought of the people who have developed those mines is not how they are going to continue to realize high prices, or not how they are going to get governmental assistance for stimulating an industry which has stimulated itself, but rather their thought is how are they going to market the great supply of the mineral that they already possess. We foresee in the case of this mineral very much lower prices, and we foresee, moreover, the necessity for a propaganda among the users of steel to educate them respecting the advantages of molybdenum steel so that they will want more of this mineral.

Senator SHAFROTH. Molybdenum steel is the hardest steel there is, is it not? I received a letter the other day from a man saying that it was much harder than that which was obtained by tungsten, and he ascertained, with reference to this very piece of property over there in Kokomo, that there was such a vast quantity that with Government aid they could have a mine there to produce any quantity.

Mr. INGALLS. I have been informed that molybdenum steel is one of the most valuable special steels that we have, but I am not an expert in steels and can not express any opinion on that subject myself.

I have mentioned these experiences in molybdenum as being illustrative of what might possibly have happened to the Government by

the making of a minimum price, which would of course be equivalent to saying that the Government gives to all producers a "put" for a certain time for all of their product. If such a guarantee had been given in this case only a short time ago, given quite innocently, given no doubt with the best information and advice available at this time—if that had happened I can imagine that the Government would have been obliged to shoulder an immense stock of the ore that would not only have been a burden in itself, but also would have ruined the industry for 10 or 20 years afterwards.

Senator SHAFROTH. How would it have injured the business for 10 or 20 years afterwards?

Mr. INGALLS. Because the Government would probably be busy in unloading its own stocks.

Senator SHAFROTH. And therefore there would not have been any demand for it afterwards—that is, any new production.

Mr. INGALLS. There would have been no demand for any new production except at very low prices. That is not conjectural; that is exactly what happened in copper in the early nineties after the collapse of the Secretan Syndicate, which undertook to buy all of the copper of the world.

Senator SHAFROTH. Unless new uses should come for it?

Mr. INGALLS. Yes; unless new uses should come for it.

I think it is rather unfortunate that the bill for this legislation that was originally introduced in the House, followed so closely on the lines of the Lever Act. Disregarding the fact that the Lever Act was designed especially to take care of conditions that exist with respect to the food supply, conditions pertaining to substances that are of seasonal production, whereas the substances that we are considering at the present time are in the main of continuous production. Substances of seasonal production are necessarily stored between seasons; they even may be hoarded. In the cases of our major metal industries, there is no such thing as storage and hoarding. There is seldom any such thing as accumulation, except when it is involuntary for the reason that the producers can not sell their material. Normally, save for the small stock that any industry ought to have as a balance wheel, the production of our major metals goes directly into consumption. The disregard of that difference in conditions, it seems to me, introduces a good deal of language that is irritating; it may not be important, or it may be, but anyhow it is rather irritating for the reason that it does not apply directly to the conditions of our business as we know them.

Now, I think that a minerals and metals board advising, foreseeing, coordinating, and planning ahead would be a useful thing. I can see, moreover, although I am opposed to the idea of fixing minimum prices as unwise—I can see certain conditions that have arisen in our industries, where in Governmental financial assistance would be desirable. Many steps that have been taken since we have been in the war have created radically new conditions in our industries—I mean new commercial conditions.

We are unable to do business in the way we used to. The old machinery in many cases has been wrecked, and one important manner in which it has been wrecked has been what is substantially a change from the contractual way of doing business to what is equivalent to putting all of our markets on a spot basis. That is

to say, the merchant and smelter are unable to protect themselves against natural changes in the market that they may foresee; they are unable to protect themselves against them by entering into contracts for forward delivery. But now in many of our important industries the Government has assumed charge of the market and there is nothing but the governmental price which may be changed arbitrarily, and no man living can foresee what the change may be.

Now, to illustrate what I have in mind, I may mention the situation in tin, which is the metal above all others wherein we are most deficient at the present time. We can undoubtedly get more tin ore from Bolivia than we are getting at the present time, and we can undoubtedly make arrangements to smelt that ore in this country, and increase to some extent our supply of tin in that way. But the smelter who goes to Bolivia and buys ore at the present fabulous prices and knows that he may be three months or more in bringing that ore to this country and converting it into metal—the smelter who knows those conditions and who knows that before he is able to realize on his purchases there may be some adverse change in prices against which him which would cause him to lose a great deal of money, is not at all keen about committing himself to such purchases.

Senator JONES of New Mexico. Now, Doctor, before passing to another subject, I think your illustration is a good one for us to dwell upon a little. What would you suggest as the proper way of handling the tin problem?

Mr. INGALLS. I should say the simplest thing would be for the Government itself to go into foreign markets and buy what it could get for its own account, and deliver its purchases to smelters in this country for conversion into metal, on what we call in the industry a toll basis, which in other language means simply a contract basis.

Senator JONES of New Mexico. In other words, create a Government monoply of this tin industry?

Mr. INGALLS. No; I would not say create a Government monopoly of the tin industry. I should say let the Government but tin ore just as in fact it buys tin.

Senator JONES of New Mexico. Well, the Government at the present time does not buy tin, as I understand it, and is not engaged in the tin business so far as I know, although I may be mistaken about that.

Mr. INGALLS. The Government buys tin for its own use; it buys a great deal of tine for its own uses. Last November the Government, through the Navy Department, commandeered the entire supply of tin existing in the United States at that time.

Senator JONES of New Mexico. Well, I understood that part, but what I had in mind was that the Government was not purchasing tin with which to supply the industry of the country.

Mr. INGALLS. No, sir; that is correct, I believe.

Senator JONES of New Mexico. Now, if the Government were to buy this ore for its own uses solely, that would be one thing; but if it were to buy it so as to produce tin enough to supply the general demand of the country, that would have the effect, would it not, of creating a Government monopoly of the tin industry?

Mr. INGALLS. I think not, because I do not think it would be able to buy anywhere near enough; I am sure that it would not, but it

could buy some tin, and in buying tin in that way for its own requirements it would release other supplies of tin to other industries.

Senator JONES of New Mexico. Now, then, to meet the governmental demand for tin—which seems to me to be the principal thing in your mind at the moment—has not the Government the right to do that now under existing legislation?

Mr. INGALLS. I have been informed confidentially by Government officers—and I would not like to be asked any further questions on this matter, except as to the general principle—I have been informed by officers of the Government that they have gone abroad and bought certain metals that it needed. Other officers of the Government have informed me that they do not know how that can be done; I do not pretend to say anything as to that.

The CHAIRMAN. I just want to bring that point out for a moment. Do you understand that the bill under consideration now permits the Government to do those very things?

Mr. INGALLS. I am doubtful.

The CHAIRMAN. I call your attention to section 11 of H. R. 11259, in which it is provided, on page 10, line 11, as follows:

That the Secretary of the Interior, with the approval of the President, is authorized from time to time to enter into contracts for necessaries for periods of not exceeding two years, to purchase, to store, to provide storage facilities for, and to sell necessaries at reasonable prices."

And so forth.

That would cover the point you have just mentioned?

Mr. INGALLS. Yes, sir.

The CHAIRMAN. Now, do you know of any law that is in existence permitting the Government at this time, after it purchases, to sell to private industries?

Senator JONES of New Mexico. There is not any.

The CHAIRMAN. No; there is not any. Now, this act would grant power to the Government, after it purchases these necessaries, to sell and apply and distribute, where needed, these metals and ores.

Mr. INGALLS. I think the Government needs authority to do that.

The CHAIRMAN. This act, therefore, provides for that. On another point, right there. If we should carry out your ideas as just expressed, would it not require more than $10,000,000 in the tin industry alone to supply our requirements and needs, not only the needs and requirements of the Government, but the industries of this country?

Mr. INGALLS. Suppose that the Government had to purchase 10,000 tons of tin at $1,500 a ton. That would require $15,000,000.

The CHAIRMAN. That would be for that single item alone?

Mr. INGALLS. Yes; of course 10,000 tons is purely an assumption, but it gives an idea.

The CHAIRMAN. In other words, your idea would be to make the Government a distributing agency for these rare metals that are needed during the prosecution of the war.

Mr. INGALLS. My idea is simply that the Government should protect private individuals who are obliged to get supplies from long distances that they can not convert into marketable form for a good many months, during which, at this very high level of prices, they are taking chances on its collapse in the market that might easily ruin them.

The CHAIRMAN. You are right.

Mr. INGALLS. And they simply won't do it.

The CHAIRMAN. We all know that the Government has taken over all the shipping of the country and is handling that now, is it not? Therefore it would be up to the Government, on these metals that we have to import for use in this country, to arrange for that importation, would it not? Carrying out your line of thought, the Government should take some action in order to protect the industries of the country at this time?

Mr. INGALLS. I think that the Government should do almost anything reasonable that anybody can think of in order to obtain tin, and it has got to be obtained from abroad, for we have not got any tin mines in this country.

The CHAIRMAN. And the creation of a revolving fund would be able to take care of that matter very successfully, would it not?

Mr. INGALLS. Yes.

The CHAIRMAN. The money would come back as the Government sold it and get into the revolving fund at the end of the war. This bill, you understand, is simply a war measure?

Mr. INGALLS. In the particular case that I have given as an example it would put the Government in a mercantile business, and the Government would be taking the chances of loss on the material in transit and in process of conversion instead of the private individuals, and private individuals will not take it because the risk is too great.

Senator SHAFROTH. Doctor, do you think $10,000,000 is sufficient fund to take care and perhaps buy and resell all of these articles that are mentioned in the bill—these ores?

Mr. INGALLS. Well, that would be wholly a guess. We have no good idea at present, I think, as to what extent the Government would have to go into the business.

Senator JONES of New Mexico. In that connection I would like to further develop the thought I had in mind a while ago. I see by the statement which I have before me that practically all of the tin which is used in this country is imported.

Mr. INGALLS. Yes, sir.

Senator JONES of New Mexico. And I think you have just made the same statement.

Mr. INGALLS. Yes, sir.

Senator JONES of New Mexico. Now, I can quite understand how it may be necessary for the Government to purchase these ores or the metal and tin abroad and bring it into the country for its own uses, but when the Government embarks upon the business of getting that metal and selling it to private individuals, must it not necessarily control the whole of that industry and create a Government monopoly?

Mr. INGALLS. I do not see that it would necessarily do so, although in the course of time we might come to that—as, in fact, they have in Great Britain with respect to copper and zinc and lead and tin.

Senator JONES of New Mexico. Now, if the Government were to engage in that business—it has control, of course, of the shipping of the country—it can so adjust what ships shall be used in the importation of tin, and with the shipping being limited and subject to artificial control and that control vested in the Government, could

entirely supply some of our industries with tin and not others, provided the others were essential to the carrying on of the war, and instead of doing that would not the same purpose be accomplished by simply providing some means of allocating the tin which is brought here?

Mr. INGALLS. I understand that the Government is already trying to allocate tin by agreement among the users. There have been some conferences in Washington between governmental bodies and representatives of consumers on that subject. The purpose has been to cut out nonessential uses of tin. Of course, that is a very desirable thing to do. That is a line of effort that is eminently proper, but I have been of the opinion for a long time that the idea that tin production and tin supply can not be increased should not be dismissed so much as it has seemed to me it has been.

Senator JONES of New Mexico. In other words, you think that some effort should be made to discover tin in this country?

Mr. INGALLS. No, sir; not that. I think that would be a waste of time and money. We have been trying in this country to develop tin mines for the last 30 years and have failed to do so. Many years ago I was myself engaged in that business. I do not think there is any good prospect of developing tin mines in this country and we must therefore be dependent upon foreign countries.

The fundamental trouble in tin is that the world's production in recent years has not increased much, if any. There has been no material increase in production in the Federated Malay States, which are the largest single sources of tin in the world. There has been a considerable increase in the production of China. Had it not been for that, the situation would have even been more desperate than it is to-day. There has been some increase in the production of Bolivia, I think the mines of Bolivia can produce more. We have two smelting works in process of construction in this country—two works for the smelting of tin ore. One of them is in fact in operation, partly.

Senator SHAFROTH. Where?

Mr. INGALLS. At Maurer, N. J. The other works that are being built are expected to be ready for operation in July; that plant is in Brooklyn, N. Y. Now, it seems to me, that there is a chance for increased tin production from that direction, and that the Government should extend all possible assistance to facilitating and promoting the business.

Senator JONES of New Mexico. What kind of assistance would you suggest in that case?

Mr. INGALLS. I should say that, in the first place, the concerns that are constructing plants should be given a No. 1 priority orders of materials that they need for completing their plants. I should say that, in the next place, the War Trade Board should do everything possible to facilitate the bringing of tin from South America to this country, and I should say that, in the third place, the Government should be prepared to render some aid in the purchase of ores so as to guarantee the smelters against loss by collapse in the market.

Senator JONES of New Mexico. Now, what kind of aid would you suggest for that purpose?

Mr. INGALLS. One kind of aid might be the Government buying ore for them.

Senator JONES of New Mexico. Well, now, it might be that, of course, but do you advise that? Do you smelters want the Government to supply you with ore?

Mr. INGALLS. I have not heard any suggestion on the part of either of the smelters that the Government should do any such thing, or that they would like the Government to do any such thing. But I have heard them express themselves regarding the hazardousness of the business that they were carrying on and the difficulties that they are encountering in being obliged to buy ore in Bolivia at the present fabulously high prices, and taking the ordinary chances on what might happen to them previous to the time of their ability to deliver the metal.

Senator JONES of New Mexico. But those concerns have assessed all of those difficulties and decided to go ahead with the construction of the plants, have they not; in other words, they have taken into account all of the difficulties surrounding the industry at the present time, and have decided that they would take the chances of going ahead and constructing the smelters?

Mr. INGALLS. Yes and no. The plans for those plants, and the actual construction of them, were entered into long before this present acute situation arose. Of course, anybody who goes into the smelting business, buying ores that are necessarily many months in process, takes chances on quotational fluctuations, as he expresses it. He figures that in the long run the losses and the gains on the stocks that he must necessarily carry will offset each other, and normally that is probably so, on the law of general average. It is only when a market experiences some cataclysmic decline from which it may never recover, or may not recover for a great many years, that losses of a ruinous nature may be experienced.

For example, when, in 1893, following the political actions as to silver, when the price for silver declined from a relatively high figure to a relatively low figure, on that decline the smelters and refiners who were necessarily carrying large stocks in the form of ore in bullion, experienced losses from which they never could recover, and any operations in tin at the present time would put the smelter in similar jeopardy.

Senator JONES of New Mexico. Now, would you say that in the case of the silver smelters, to whom you have just referred, and the conditions surrounding that industry at the time, should be recouped by the Federal Government, that those losses should be taken care of by the Federal Government?

Mr. INGALLS. No, sir.

Senator JONES of New Mexico. Would you say that with regard to the present tin situation?

Mr. INGALLS. Yes. I should say most distinctly that not one iota of assistance should be offered to people engaged in such an industry under ordinary conditions, but now as we have a case where our Government wants tin it ought to help to get what is needed.

Senator JONES of New Mexico. Well, now, I think you have already suggested the remedy, and that is to get ships to bring in the ore. If you had transportation for those ores, would that not satisfy you people?

Mr. INGALLS. We have got to bring in the ore; we have got to find the ships to do it.

Senator JONES of New Mexico. Of course the Government can assist you in doing it.

Mr. INGALLS. I think the Government is doing, and will do, everything needful to promote that movement, because if it does not we would have to go without tin.

Senator JONES of New Mexico. Are those two smelters that you have referred to owned by the same concern?

Mr. INGALLS. No, sir.

Senator JONES of New Mexico. Are there any other tin smelters in the country?

Mr. INGALLS. Not that I would call commercial affairs. I know of one other small experimental plant.

Senator JONES of New Mexico. Now, then, Doctor, here is the situation. We have in this country two smelters, smelting tin ore. All of the ore must be imported and the only supply of tin comes from abroad. In order to protect those two smelters would you advise the very drastic remedy of having the Government engage in the business of buying and selling tin in order to supply the entire United States?

Mr. INGALLS. I should dislike to see the Government undertake the whole tin business of the country. I am averse to seeing the Government doing anything that the people can do for themselves. I should not want to see the Government do anything to assist the tin smelters except to the extent that the Government needs to get tin for the successful prosecution of the war.

Senator JONES of New Mexico. Now, if the Government were to buy the ores and take them over to the smelter, the Government would necessarily say at what price you should buy the ore, what you should pay for the ore, and if it went that far, before it would turn you over the ore at any price, the Government would necessarily want to know at what price you were going to sell your product, would it not, and it would simply put you smelters working on a margin basis fixed by the Government?

Mr. INGALLS. I have suggested that with regard to this particular case the Government might go abroad and buy raw material in just the same way it goes abroad and buys finished material.

Senator JONES of New Mexico. Now, Doctor, right there, I would like to keep a distinction in your mind—as it is in mine—if you think it is proper to do so—a distinction between the Government's supplying its own demands and the demands of the country in general; I mean, supplying the demand for its own use as distinguished from the general consumption of the commodity in the country at large. Now, I can quite understand how, if the Government needed tin for its own uses, it might be a very good thing for it to buy ore and take it to you smelters and pay so much for smelting that ore and turning over the finished product. I can quite understand that. But, in order to supply the general tin market, do you think the Government should go that far?

Mr. INGALLS. At the present time there is no general tin market. I can not foresee how during the course of the war, and the supply of tin being deficient, as it is, that there can be any general tin market. As to the Government obtaining its tin for its own purposes, the Government in taking such action as to tin would be doing simply what it is doing on a far greater scale in lead, in which market

it buys from the producers very large quantities of lead, some of which it orders to its own arsenals and its own navy yards and some of which—and this is the larger portion—it orders distributed to contractors who are engaged in governmental work.

Now, as to the suggestions that I have offered in respect to the Government buying tin ore in Bolivia is precisely analogous to that The only novelty, I might suggest, that I can see is that we have intimated that the Government might possibly buy the crude material instead of the ingot. I was handed yesterday a newspaper clipping to the effect that Germans buying up platinum in Colombia and tin ore in Bolivia so that we should not get it. I am disposed to put some credence in the newspaper clipping, for in discussing it with a person who is very well informed respecting Colombia and the conditions of the platinum producetion there I ascertained that his private advices coincided with the press report, and it is a natural inference that the writer thereof may have had equally good information as to the buying of tin ore in Bolivia.

Senator SHAFROTH. Now, what remedy would you suggest for that?

Mr. INGALLS. I should think we would have to meet them on the same ground.

Senator SHAFROTH. Why can not the individuals do it just as well as the Government?

Mr. INGALLS. I think the individual might think that he would go broke.

The CHAIRMAN. I have heard the same thing with reference to platinum in Columbia; that there is supposed to be a German agent there buying up from all the natives the small amounts that they bring in and controlling the entire output as far as possible in Colombia, and the suggestion was made to me that this Government should have an agent there, picking up these small purchases and conserving the supply for use in this country.

Mr. INGALLS. I do not see how we are going to meet that condition in any other way.

The CHAIRMAN. Unless we do something like that.

Mr. INGALLS. As I have already told you, this Government has done just that thing in the case of another metal.

The CHAIRMAN. Mr. Macbeth, you and I were talking to a gentlemen the other day in regard to that very matter.

Senator JONES of New Mexico. If it has done that already in regard to another matter, why can not they use the same agency to do that with regard to platinum?

Mr. INGALLS. I am not sufficiently versed in governmental affairs to answer that question.

Senator SHAFROTH. Doctor, I want to ask you a question as to your conclusion on the expediency of fixing a minimum price. As I understand it, you do not believe very much in price fixing at all, but you prefer very much the fixing of a minimum price to the fixing of a maximum price. Is that what I understand your position to be?

Mr. INGALLS. Pretty nearly. I am averse to any price fixing.

Senator SHAFROTH. Either maximum or minimum?

Mr. INGALLS. Either maximum or minimum. I made the distinction, however, that while maximum-price fixing would curtail pro-

duction, minimum-price fixing would undoubtedly stimulate it, which is one of the purposes of this bill. But it would stimulate it, I think, at an enormous expense to the Government, and probably to the eventual disaster to the industries that have been stimulated.

Senator SHAFROTH. Now, will you give us your view relative to that portion of the bill which provides for a licensing system and how and to what extent, in your judgment, can that be made the basis of a maximum-price fixing?

Mr. INGALLS. I am entirely opposed to the licensing system.

Senator SHAFROTH. What effect will it have, in your judgment?

Mr. INGALLS. It will have an irritating effect. It will tend to put grit in the gears.

Senator SHAFROTH. Do you think that under a licensing system that practically a maximum-price fixing could be made as a result of orders under that licensing system?

Mr. INGALLS. I think it might come to the same thing. It could be done under a licensing system.

Senator SHAFROTH. Doctor, I will ask you whether any other system that you know of could be devised that would prevent enormous profits being made? As I understand the object of this bill is to first stimulate production, and, secondly, advocating putting into the bill such checks as would prevent enormous profiteering. Now, what checks do you think are necessary to put into the bill to prevent that profiteering? There is one, we know, now operating to very good effect and that is by excess war taxes, so that if a man makes excess profit he has got to yield a certain portion of that to the Government, and that has a tendency to prevent that. Do you think of any other that would have a tendency to prevent that?

Mr. INGALLS. I not only do not think of any other, but I am of the opinion that there ought not to be any other.

Senator SHAFROTH. That is, the ordinary rule of supply and demand ought to control?

Mr. INGALLS. Yes, sir.

Senator SHAFROTH. Now, suppose the supply and demand proposition is annulled by some action, what do you think is the way to handle that, or, in other words, have you any suggestion to make as to curbing this excess-profit taxing other than that which we have in the antitrust law?

Mr. INGALLS. I do not think of any other.

The CHAIRMAN. Doctor, your idea, then, briefly stated, is to have some legislation whereby the production of these metals might be stimulated and a sufficient amount appropriated so that whatever agency handled it could go and get the stuff and have the money to operate on without regulatory and controlling features being thrown around to discourage production?

Mr. INGALLS. Yes, sir; I think that. I think, however, that natural factors, especially high prices that are created by strong demand, are in themselves stimulating the production of all of these metals so rapidly that we will have enough of them before any administration such as is contemplated could get to work. I think that we might well have a minerals and metals board that would be advisory, and that would foresee and try to avert difficulties and troubles that are going to come. The difficulties that we are in at the present time

in manganese, in sulphur, and in tin were foreseen by many of us a year ago. I think that we could well have in Washington a board manned by experienced men, men with the capacity to foresee and plan ahead, just as they are bound to do in the prosecution of commercial business.

Senator JONES of New Mexico. Is that a function of the War Industries Board, or a part of it?

Mr. INGALLS. Has Mr. Baruch been upon the stand?

The CHAIRMAN. Not before this committee. He was before the House committee, but not before the Senate committee.

Mr. INGALLS. Without saying whose function it ought to be, I do not think there has been an adequate exercise of the function heretofore. If there had been, we should have taken some steps to meet the several crises with which we are confronted now. I think we could well have a central coordinating body, whose function would be to take such a view of things, but I would like to see that body created with the idea that it is going to be a consulting engineer and adviser rather than with the idea that it is going to be a policeman.

Senator JONES of New Mexico. Then, if expert engineers were made available for the use of the people engaged in these specific industries, you think they would manage to work out this stimulation of production in the handling of these commodities in as efficient a manner as it could be done?

Mr. INGALLS. I think they would play an important part in that, but I think the production of those commodities is going to stimulate itself anyhow in almost all the minerals that are here enumerated. There is already a feverish activity in them all over the country. We are doing new things. You have heard some gentlemen tell you about the scarcity of high-grade manganese ore in this country, and also of our possession of bountiful supplies of low-grade ore. We have already learned in this country how to make ferromanganese out of low-grade manganese ore by electric smelting. The Anaconda Copper Mining Co. is even now erecting a plant to make ferromanganese out of low-grade manganese ore in Butte, to which, a year ago, no attention whatever was paid. That ore was then valueless, yet to-day the Anaconda Copper Mining Co. alone is building a plant which will produce, it is estimated, about 8 per cent of the ferromanganese that the whole country used last year. You do not need to be told that the success of that company in this direction—and it is generally successful in what it undertakes—is not going to induce other people to do likewise. We are moreover working on the hydrometallurgical processes for the extraction of nearly pure manganese dioxide from low-grade earthy ores, and I prophesy that before very long we shall be producing in that way. The high prices that are prevailing will lead people into the business for the sake of the profit they can get out of it. The fixing of restrictive maximum prices is the only thing that will stop them.

Senator JONES of New Mexico. Doctor, in this bill, there are a very large number of metals named. Would it be practicable to provide any scheme which should apply to all of these metals and do justice to the industries and do justice to the Government, or would it be necessary to take up each industry and deal with it as an integral thing?

Mr. INGALLS. The administrator under this bill would have to treat each metal by itself. If you will permit me, Mr. Chairman, I think there are some details in the bill to which attention should be drawn.

I think that in section 1 there should be an additional sentence making it perfectly clear that the purpose of the bill is to apply only to the minerals specified herein, and to prevent the constructive extension of the administration to those metals in cases where they are produced simply as by-products.

Senator JONES of New Mexico. It is running through my mind that this committee ought to take up each one of these metals as a distinct proposition and see what legislation, if any, is necessary with respect to each particular metal, and you do not think it would be advisable to give anybody full power to call upon the Public Treasury to deal with these metals en masse, practically, as he should see fit, do you? Do you think Congress would be justified in that kind of legislation?

Mr. INGALLS. Congress would be putting a great deal of power into the hands of the administration—I mean the body that was especially charged with the administration of this bill.

Senator JONES of New Mexico. I understand you.

The CHAIRMAN. What would you think of the immediate creation of a portfolio of Secretary of Mines to handle all metallic and non-metallic minerals and ores?

Mr. INGALLS. That is rather a sudden inquiry. I would rather not express any offhand opinion as to that.

The CHAIRMAN. It is rather along the line of your suggestion awhile ago, that you would much prefer to see an advisory board, or some one in an advisory capacity instead of in a police capacity.

Mr. INGALLS. I presume that this document [indicating], which was put in the proceedings in the House by Mr. Wingo, has been introduced in the present hearings?

The CHAIRMAN. It has not been put into the record, but we have it before the committee.

Mr. INGALLS. You will note that under each subject there is a caption "Need for governmental control," which expresses the idea of the Geological Survey and the bureau, I assume, as to the necessities. I am not sure that in all cases I would agree with the ideas that are stated.

Senator JONES of New Mexico. Well, that is what I had in mind, that we ought to get into this record somewhat detailed information regarding each one of these industries. I personally do not feel like dealing with them en masse.

The CHAIRMAN. I may state, Senator Jones, that that is the intention before we finish these hearings.

Senator JONES of New Mexico. I should like Dr. Ingalls, if he will, to indicate the metals as to which he has special information, so that we may interrogate him regarding those. I presume, Doctor, that you have had special relations with certain of these minerals, if perhaps not all?

Mr. INGALLS. Yes.

Senator JONES of New Mexico. And at our next session, if you could prepare a brief statement regarding the particular industries

of which you have special knowledge, I am sure the committee would appreciate it very much.

Mr. INGALLS. I shall be very glad to do that, Senator; I am entirely at the service of this committee.

Senator JONES of New Mexico. That is very kind of you, I am sure.

The CHAIRMAN. It is now 10 minutes past 12 o'clock, and the committee will adjourn until to-morrow morning at 10.

(Accordingly, at 12.10 p. m., the committee adjourned until to-morrow, Wednesday, May 8, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

**WEDNESDAY, MAY 8, 1918.**

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING.

The committee met at 10 o'clock a. m., Senator Charles B. Henderson (chairman) presiding.

Present: Senators Walsh, Shafroth, and Jones of New Mexico.

Also, George Otis Smith, Esq., Director Geological Survey.

The CHAIRMAN. The committee will come to order. Mr. Merrill, I understand that you desire to make a statement to the committee.

## STATEMENT OF MR. CHARLES W. MERRILL, CHIEF OF DIVISION OF COLLATERAL COMMODITIES, UNITED STATES FOOD ADMINISTRATION.

The CHAIRMAN. Mr. Merrill, please state your name and occupation.

Mr. MERRILL. My name is Charles W. Merrill; I am Chief of the Division of Collateral Commodities, United States Food Administration.

The CHAIRMAN. How long have you been connected with the Food Administration?

Mr. MERRILL. Since October 8, 1917.

The CHAIRMAN. What particular matters, if any, have you handled under the Food Administration?

Mr. MERRILL. Chemicals and other commodities, collateral to food production.

The CHAIRMAN. Have you given any study to the arsenic situation in this country?

Mr. MERRILL. I have given considerable study to the arsenic conditions in this country. We found the situation rather bad last fall, owing to the fact that imports had been cut off, and that there appeared to be a threatened—and was a threatened—shortage in connection with the production of insecticides, which are essential to protect our growing food crops.

The CHAIRMAN. State, please, what different uses arsenic is put to, and the need and requirements for arsenic.

Mr. MERRILL. The principal use of arsenic is in the manufacture of insecticides, which consumes approximately 60 per cent of its production in this country. In addition to that, the next most important use is in the manufacture of glass, particularly the higher grades of glass, such as plate glass. Another use which has recently been developed is that of weed killing along the rights of way of railroads and in various public parks.

The CHAIRMAN. What is the situation to-day relative to the supply being sufficient to meet the demands and requirements of the Government?

Mr. MERRILL. Owing to the action taken by the President, in putting arsenic under the control of the Food Administration, the present supply is ample, and the production has been increased. The production is approximately 20 per cent greater for the first quarter of this year than last year, in spite of the fact that the price has been reduced from about 16 cents to 9 cents in carload lots.

The CHAIRMAN. Does 9 cents afford a reasonable profit for the producer?

Mr. MERRILL. It was recommended as giving at least a reasonable profit to the smelters or manufacturers. The prewar price averaged 4 cents for the three years previous to the war, and it had been sold as low as 2 cents a pound. It was considered a typical example of profiteering, owing to the fact that imports had been cut off, and the further fact that such industries as the glass industry could afford to pay any price for it, because it could be reflected in their price to the consumer; whereas insecticide manufacturers have been faced with the high price, and if they raised their price to the ultimate consumer—in this case the farmer—he would hesitate to buy it at that price, and so hesitating, it is curtailing its consumption.

The CHAIRMAN. Does the price that you have fixed stimulate the production to any great extent?

Mr. MERRILL. The reasonable profit that we recommend—and I wish here to be perfectly clear about that, that there was no price fixing—I would like to introduce, if I may, my communication in another connection on that matter. It states in the beginning:

As a guidance to you in determining the amount of profit to be taken on sales of arsenic products, in order that the prices charged should not be exorbitant, I wish to state that the Food Administration will consider any price in excess of the following as being unfair and extortionate.

The CHAIRMAN. That paper will be inserted in the record.

(The paper referred to is here printed in full, as follows:)

UNITED STATES FOOD ADMINISTRATION,
*Washington, D. C., February 23, 1918.*

*To all producers of white arsenic:*

GENTLEMEN: As a guidance to you in determining the amount of profit to be taken on sales of arsenic products in order that the prices charged should not be exorbitant, I wish to state that the Food Administration will consider any price in excess of the following as being unfair and extortionate:

Nine cents per pound, delivered at any point in the United States, for arsenious oxide or white arsenic containing not less than 99 per cent $AS_2O_3$; or

A price per pound, delivered at any point in the United States, for arsenious oxide containing less than 99 per cent $As_2O_3$, equal to the value of the $AS_2O_3$ contained therein, at the rate of 9 cents per pound for such $As_2O_3$:

And sales of such products shipped in less-than-carload lots at prices which exceed the above by more than one-half cent per pound would, under the present war conditions, return to you an unreasonable profit, and such sales would therefore constitute a violation of general rule 4 and special rule 2 governing licensees manufacturing white arsenic.

The Food Administration will not for the present interfere with the filling of contracts entered into before the receipt of this notice, at prices higher than those aforesaid.

This conclusion has been reached after a careful consideration of the interests of both the manufacturer and the consumer. The advantages of stabilized market conditions are fully realized, and while the position which the Food Administra-

tion now takes is based on existing conditions, there is little likelihood of this position being changed in the near future in the absence of a radical change in the situation.

Very truly, yours,

UNITED STATES FOOD ADMINISTRATION,
Per CHARLES W. MERRILL.
*Division of Chemicals.*

Mr. MERRILL. I do not know that I answered your question fully. Would you please repeat it?

The CHAIRMAN. Has the price that you have fixed then stimulated the production to any extent?

Mr. MERRILL. I would like to explain, in regard to that, that I called all the producers together and showed them how the present very high prices were curtailing consumption and at the same time proving a menace to the production of food, and that when the situation was explained to them they all agreed that whatever profit was determined reasonable, or was estimated to be reasonable, that they would accept and would increase the production as much as possible.

The CHAIRMAN. Your arrangement then was a voluntary arrangement?

Mr. MERRILL. It was partly voluntary, but it was through the powers conferred by the food bill. We could go into their books and get at the cost through the Federal Trade Commission and determine a fair profit. As a matter of fact, they all submitted their costs, the figures of which ranged about 5 or 6 cents per pound—their estimates.

The CHAIRMAN. You felt, then, that the course you pursued under that act was in the public interest, did you not?

Mr. MERRILL. Absolutely.

The CHAIRMAN. Will you explain why, and to what extent, and the reason for your action in that matter?

Mr. MERRILL. The prime reason was to provide complete protection of crops against insect plagues during the war. That was one, and promoting the proper use of insecticides generally, and to assure the Government of its supply for ammunition for gas purposes, and to do this there were three factors involved: In the first place, to control and to prevent extortionate profits and profiteering; and in the second place, to control the distribution and curtailing its use in such nonessential purposes as weed killing; and in the third place, the cooperation of the industry to at least maintain and to increase production, if necessary.

The CHAIRMAN. How far does the production of this country of arsenic meet the consumption?

Mr. MERRILL. The production of this country will barely meet the consumption at the present rate, which is 20 per cent greater for the first quarter of 1918 than during the corresponding period of 1917. If any large increased demand, called for by insect plague or by munitions requirements, materialized, it would be necessary to curtail nonessential uses; and, in fact, it has been necessary to curtail them during the manufacturing season of insecticides, just about completed at the present time.

The CHAIRMAN. In your opinion, then, is it necessary to take some action to stimulate the production of arsenic in this country, or do

you feel that the Food Administration has sufficient power and authority under the act under which it operates to go ahead with the matter without further legislation?

Mr. MERRILL. I feel that in case of this particular chemical, which is so vital to the production of our food crops, the Lever bill apparently gives fairly satisfactory powers.

The CHAIRMAN. It was because of that fact that the Food Administration took up the situation relative to arsenic in this country, was it not?

Mr. MERRILL. Absolutely; and I think exactly the same conditions prevailed regarding other chemicals over which the food bill has no control which have prevailed in the case of arsenic, and that it is absolutely necessary that similar powers should be granted in connection with the production of other chemicals. From my experience with arsenic, it is my judgment that there should be power to control prices, to distribute material produced to essential uses, and to control the retailer.

The CHAIRMAN. Why do you think it is necessary for legislation of this kind to fix prices on the metals mentioned in this bill?

Mr. MERRILL. In order to promote the development of prospective mines, which would not otherwise be justified in taking the risk of such development and providing the necessary equipment.

The CHAIRMAN. Do you think it is in the public interest that power be granted to fix prices?

Mr. MERRILL. I think it is in the public interest that power be granted to so control prices as to stimulate production of essential minerals, as well as to prevent exorbitant profits on the part of those who might be inclined to take advantage of the present abnormal conditions.

The CHAIRMAN. You said that in the case of arsenic it went as high as 16 cents?

Mr. MERRILL. As against a prewar price averaging 4 cents for the three years prewar normal and against sales which had been made at as low as 2 cents a pound.

I wish to say in regard to that, however, that arsenic is a by-product; that it is necessary to recover it in order to control the fume menace, and that therefore the extremely low prices at which it was sold do not indicate that it could be produced at quite such low figures as it was sold at.

The CHAIRMAN. Under the rules and regulations of the Food Administration at this time, arsenic is selling now at 9 cents, as I understood you?

Mr. MERRILL. In carload lots; yes, sir.

The CHAIRMAN. And has the production been stimulated at all, under those rules and regulations?

Mr. MERRILL. I think the production has been stimulated as the result of two factors—first, because the smelters have been brought to a realization that the extreme high prices which prevail owing to cutting off imports were interfering with free consumption; and, secondly, because the Food Administration placed it before them in the light of a patriotic duty to protect crops in this country.

Senator WALSH. What service does it supply in the crop-producing problem?

Mr. MERRILL. It is the basis of insecticides, killing bugs—like Paris green and calcium arsenate.

Senator WALSH. And has any other use been developed?

Mr. MERRILL. For arsenic?

Senator WALSH. Yes; consequent upon the war?

Mr. MERRILL. A use has been developed, but I do not know how much it has been applied for that purpose, in connection with the production of poisonous gases. Quite a large demand was expected to develop in that connection at the time we took hold of arsenic.

Senator WALSH. What are the figures on consumption and production?

Mr. MERRILL. The production for the first quarter of 1918 amounted to 3,113,000 pounds. That is at the rate of 7,000 tons per year. That does not include the Canadian production, which amounts to between two and three thousand tons per year.

Senator WALSH. That is Nova Scotia?

Mr. MERRILL. Mostly in Cobalt and at Delaro.

Senator WALSH. Well, that is, say, ten to twelve million pounds a year.

Mr. MERRILL. I think so. The Geological Survey may perhaps have the total figures on that closer than I have. I would not want to give it offhand.

Senator WALSH. Have you importations there also?

Mr. MERRILL. I have not.

Mr. BASTIN. It was about 6,151 short tons, in 1917.

Senator WALSH. What I was seeking by this question to develop was whether there is any necessity for stimulation in arsenic production; in other words, has the demand occasioned by the war increased to such an extent as that there should be some governmental interference in order to stimulate the production of arsenic?

Mr. MERRILL. The demand by the war has increased very materially the requirements for arsenic in this country. Within the past six months England has taken lots of arsenic from us because their other sources of supply were cut off, and also we have been supplying the demand for South America for killing ship ticks which hitherto had been supplied by England.

Senator WALSH. Can you give us those figures with respect to exportations during the prewar period?

Mr. MERRILL. I am sorry to say that I can not.

Senator WALSH. As you have said, arsenic is simply a by-product to smelter operations?

Mr. MERRILL. Yes, sir.

Senator WALSH. There is no other source of supply that you know of; it is not mined as a separate metal?

Mr. MERRILL. It is not; so far as I know.

Senator WALSH. As far as you know, it is simply a by-product?

Mr. MERRILL. As far as I know, it is a by-product; yes, sir.

The CHAIRMAN. Then, that being the case, you would not expect, would you, that the production would be increased by any governmental regulation?

Mr. MERRILL. Yes, sir; and because there are a great many smelters who do not save it—a great deal of which was treated in such smelters which might be treated in smelters which could be saved.

Senator WALSH. But are there any smelters now smelting arsenical ores that do not save arsenic?

Mr. MERRILL. The Anaconda saves part of it, but not all. I think none of the smelters in California save their arsenic.

Senator WALSH. The Shasta Smelter does, does it not?

Mr. MERRILL. The American Smelting & Refining Co. plant at Valoja, to the best of my recollection, does not save its arsenic.

Senator WALSH. I was not referring to that.

Mr. MERRILL. May I ask who is handling the one at Shasta?

Senator WALSH. I do not know.

Mr. MERRILL. As far as I know, there is practically no arsenic produced in California. I may be wrong about that.

Senator WALSH. It was the subject of an action brought by the Government to enjoin the operation because the arsenic fumes were destroying the forests adjacent thereto.

Mr. MERRILL. And then they may still save those fumes and not produce the arsenic.

Senator WALSH. How is that?

Mr. MERRILL. They may still save the fumes, in accordance with that, and still not produce arsenic, because by saving the fumes we simply save the crude arsenic, which subsequently has to be refined, and then refining facilities to control the production of arsenic.

Senator WALSH. That is, they just simply take out the crude arsenic and destroy it?

Mr. MERRILL. And do not refine it or put it on the market. That is the case generally, I think.

Senator WALSH. Well, so long as the price ranges anywhere from 9 to 16 cents there is not very much need of interfering with it to stimulate the production, is there?

Mr. MERRILL. Even with that high price, the smelters might hesitate to install the necessary refining equipment unless assured of a market for a material period.

Senator WALSH. Well, is the necessity for an added supply of arsenic, as we see it now, so great or pronounced that the Government ought to step in and guarantee a price, say, of 9 cents, or any other price, for a definite period of years, do you think?

Mr. MERRILL. I should say, in view of the control which the Food Administration has over arsenic through the Lever bill, that in case of that particular mineral I should answer no.

Senator WALSH. There would seem to be no necessity for further legislation with reference to that particular matter?

Mr. MERRILL. As to the method, I should say no, sir. Conditions might change very rapidly, particularly if the gas service demands large quantities of arsenic.

Senator WALSH. Has arsenic up to the present time been volatilized so as to be utilized in gas?

Mr. MERRILL. Yes, sir.

Senator WALSH. By which of the belligerents?

Mr. MERRILL. My opinion is that it is a constituent of mustard gas used by the Germans, and that the gas service section of the Army here has made a number of experiments. At one time they asked for all the arsenic that could be spared. They subsequently changed that request and stated to me that they were not at all certain they were

going to use it. I have had no definite advices from them since that time. Of course, if they should require it, they would probably require it in such quantities as to make a rather drastic curtailment of nonessential uses necessary, as well as further stimulation of the production.

Senator WALSH. Let us pass from that. Apparently the arsenic feature of it is being handled very successfully now. What particular metal is there in the list that you think ought to be subjected to price-fixing regulation in view of the existing condition?

Mr. MERRILL. I might cite manganese.

Senator WALSH. That is commanding somewhere about $40 a ton now, is it not?

Mr. MERRILL. Yes, sir.

Senator WALSH. And that represents what percentage?

Mr. MERRILL. Do you mean what percentage of the manganese?

Senator WALSH. Yes.

Mr. MERRILL. What grade of ore?

Senator WALSH. Yes.

Mr. MERRILL. I could not say with regard to that. Probably some of the gentlemen representing the Geological Survey could answer that better than I could.

Mr. MACBETH. It is 250 tons ferromanganese—7 per cent.

Senator WALSH. And what was the price at the earlier period?

Mr. MERRILL. About $90.

Mr. GEORGE OTIS SMITH. You mean manganese ore, do you not, Senator?

Senator WALSH. Yes; manganese ore.

Mr. SMITH. Of the high grade, I think it is in the book distributed to the committee—the average price in 1917 was $26.95 to $58.80.

Senator WALSH. What grade of ore is that, Doctor?

Mr. SMITH. That is 40 per cent and better.

Senator WALSH. Forty per cent ore?

Mr. SMITH. Yes.

Senator WALSH. Manganese ore?

Mr. SMITH. But these other provisions are for ferromanganese, I suppose.

Mr. MACBETH. I referred to ferromanganese.

Mr. MERRILL. I naturally assumed, Senator Walsh, when you spoke of $40 a ton, that you were referring to ferromanganese.

Senator WALSH. Let us take manganese ore as it comes out of the mine, because that is what we are going to stimulate, if we touch it at all. What does that bring now, and what did it bring prior to the war, giving us, about, the percentage of manganese in the ore? Can you give us those figures, Dr. Smith?

Mr. SMITH. Yes; they are in this document [indicating]. In 1917 the domestic production of 39 per cent ore was 113,734 tons, the price ranging from $26.95 to $58.80. That is in the statement prepared by the Geological Survey and the Bureau of Mines.

Senator WALSH. Doctor, as to that same kind of ore, what does it bring now?

Mr. SMITH. That was last year. Take the prewar price of $13, when we produced about 4,000 tons, the average price was $12.25, less than one-half of the lowest price that was quoted last year.

Senator WALSH. That would represent the price of the imported ore at that time. Does that represent 39 per cent ore?

Mr. SMITH. The same grade of ore; yes, sir.

Mr. MERRILL. This is domestic production. It is headed "Domestic production and prices for 1911, 1912, and 1913," the prices given here. It is given here as $12.25 per unit, I presume that is.

Mr. SMITH. Yes; it is.

Senator WALSH. What is the unit?

Mr. SMITH. That is the ton price.

Senator WALSH. It ranges from $26.95 to $58.80.

Mr. SMITH. Yes, sir.

Senator WALSH. Of course, the demand has very greatly increased.

Mr. MERRILL. Yes, sir.

Senator WALSH. And the facilities for importation have diminished and the cost of the imported ore has largely increased?

Mr. MERRILL. Yes, sir.

Senator WALSH. Well, my recollection is that we produced about one-twelfth of what we consumed in this country.

Mr. MERRILL. The production there, you see, will vary from 1,000 tons to 112,000 tons.

Mr. SMITH. About one-third last year.

Senator WALSH. I had it in mind that we produced about 200,000 tons and imported 600,000 tons, making 800,000 tons in all.

Mr. MERRILL. It would be in that neighborhood.

Senator WALSH. That would be one-fourth that we produced in this country.

Mr. MERRILL. Yes, sir.

Senator WALSH. And three-fourths we import.

Mr. MERRILL. Yes, sir.

Senator WALSH. Now the maximum price—fixing a maximum price on manganese. We could not regulate the price on the imported article, could we?

Mr. MERRILL. Not without further legislation, I suppose. I do not see any way that it could be done.

Senator WALSH. Can you regulate it at all?

Mr. MERRILL. No, sir; except by duty, of course.

Senator WALSH. But that would increase the price, and as far as manganese is concerned we would like to decrease it, if we could, as far as the imported article is concerned.

Mr. MERRILL. That is correct.

Senator WALSH. But we can not do that, can we? You do not know of any means by which we can reduce the price of the imported article?

Mr. MERRILL. No, sir; I know of no means by which that could be done.

Senator WALSH. Of course if we do not pay them what they ask, they will send the stuff somewhere else.

Mr. MERRILL. Of course I understand these are ordinary conditions, but my thought at the moment is that we can not get any by importation because the Shipping Board will not permit ships to bring it.

Senator WALSH. Well, as far as manganese is concerned, we have got to do everything that we can to stimulate its production in this country?

Mr. MERRILL. Yes, sir; that is correct.

Senator WALSH. In that case you would not want them to put a maximum price on it, would you, because that of course would tend to check production?

Mr. MERRILL. I see no public interest in regard to manganese which would apparently justify a maximum price regarding it.

Senator WALSH. Now as to the minimum price; would you think it would be advisable to fix a minimum price?

Mr. MERRILL. I think that it will be necessary to fix a minimum price. I think it will probably be necessary to give the owner of the manganese properties some justification for developing and equipping his property, and not only as to a minimum price but also as to the length of time that that minimum price should apply.

Senator WALSH. That would be a guaranty, would it not, the same as we guarantee the farmers $2 or $2.20 a bushel for wheat?

Mr. MERRILL. It would be in the shape of a Government guaranty; yes, sir. That will not be sufficient, however, in my judgment. There must be a further control which would prevent, for instance, manganese from going into the pottery industry and let it go into the manufacture of guns.

Senator JONES of New Mexico. Can not that be controlled by railroad priorities—transportation priorities?

Mr. MERRILL. It is rather difficult for me to see how, if I am a dealer in manganese in Philadelphia and I secure transportation by any method whatsoever—it is rather difficult for me to see how I could be prevented, without that control, from selling manganese to the pottery manufacturer, if he offered me more for it than the steel manufacturers.

Senator JONES of New Mexico. But suppose you could not deliver it to him?

Mr. MERRILL. That would control, would it not? Perhaps I misunderstood you, but that was my thought. There must be some control of the uses.

Senator WALSH. Senator Jones apparently desired to convey to you the idea that probably legislation is not necessary as far as that feature is concerned, because it could be controlled by the rules of priority.

Mr. MERRILL. Yes. I do not see how, if a man has a carload of ore, and I buy his carload of ore, and 70 per cent of that I propose to sell for the manufacture of guns and 30 per cent for the manufacture of fancy pottery—I do not think that the railroad priority can cut off the transportation of 70 per cent of that ore, or that they would cut off the transportaion of 30 per cent when 70 per cent was going to a vital use.

Senator WALSH. Assuming that you were director of railroads, or director of priorities, and the shipper out West has a carload of manganese. He wants to ship it to a pottery establishment. If he wants to ship it to some other dealer, you say, "We won't ship direct to potteries." Could you not issue an order that would make it impossible for him to ship that?

Mr. MERRILL. I certainly could, in that particular case.

Senator WALSH. Suppose that he does not want to ship, but he ships it to a dealer—it goes to a dealer, we will say, at Pittsburgh.

He is accumulating ore, or is reducing it, and when he gets through with it he wants to ship some of the metal itself—the ferromanganese, if that combination is needed in a pottery establishment—he wants to ship to a pottery establishment, as railroad administrator, you could easily arrest that shipment, could you not?

Mr. MERRILL. Theoretically, yes. I think practically, from my experience with railroad transportation during the past six months, if you asked the Director of Railroads to control the uses and police the uses of a given commodity he would not only be extremely reluctant but would find it most difficult, if not impossible, to comply.

Senator JONES of New Mexico. He is doing that with steel, is he not?

Mr. MERRILL. He is doing it with steel, because that is a commodity that can be controlled in carload lots, and can be handled, I think, comparatively easily, as compared with the smaller consignments which move in smaller lots.

Senator WALSH. I can readily understand that.

Mr. MERRILL. It seems to me that the assurance to the producer that he will have a market at such reasonable price, and for such length of time as would justify him in developing, equipping, and keeping his property together, with the exercise of governmental control as to the distribution, are points that are absolutely vital to the production of such material as manganese and pyrite both, which are so vitally needed at the present moment in our war program.

Senator WALSH. That is to say, the license provision and the guaranty provision would take care of the manganese proposition?

Mr. MERRILL. In my judgment, it would.

Senator WALSH. As far as it could be taken care of by the Government?

Mr. MERRILL. Yes, sir; I think the same control over manganese that we have through the Lever Act as to arsenic would take care of the manganese situation, except that from my own experience during the past six months, with the control of arsenic, it is my judgment that the retailer could be controlled just the same as the producer and distributor.

Senator WALSH. Now, have you any other suggestions to make looking to increasing the production of manganese than that we have been discussing—the guaranty of a high price for a certain period of time? Suppose it is published abroad to every prospector and mining engineer, that the Government will guarantee the price, say, of 9 cents for manganese for three years. Do you think that the production would be materially increased?

Mr. MERRILL. I think it would. I presume in the figure of 9 cents that you had in mind had reference to arsenic. But at whatever figure was deemed proper; yes, sir.

Senator WALSH. Well, we will say the current price; say $40.

Mr. MERRILL. I understand that that is immaterial to the question of whatever price was determined to be a reasonable price. I think that might have to be changed from time to time.

Senator WALSH. If it were to be guaranteed, it could not be changed, could it?

Mr. MERRILL. Well, it could be a guaranteed minimum.

Senator WALSH. Yes; but there would be no object in changing it, would there?

Mr. MERRILL. I think conditions might arise where it might be absolutely necessary and absolutely vital to change it. For instance, if you took a certain price, and that did not produce the manganese that was needed in steel for our munitions purposes, and investigation proved that the price was not enough, I think it would have to be raised.

Senator WALSH. Can you state what the relative consumption is in steel manufacture and in pottery?

Mr. MERRILL. No, sir. Pottery would unquestionably be a very small use. I simply used that as an illustration.

Senator WALSH. You think it would be inconsequential?

Mr. MERRILL. It probably would; yes, sir.

Senator WALSH. Now, is there any other large use for manganese, except in the production of ferromanganese, for use in steel manufacture?

Mr. MERRILL. Well, potteries. Personally, I am not an expert on manganese.

Senator WALSH. Let us take some other item—some other metal in the list.

Senator JONES of New Mexico. Before leaving this one item of manganese, what minimum price would you fix on manganese?

Mr. MERRILL. I could not say that without a thorough investigation.

Senator JONES of New Mexico. What factors would you investigate in order to determine that?

Mr. MERRILL. I would investigate the present cost of production, and I would investigate the cost of equipment and development of the property, and then by careful consideration of both factors, my thought would be to fix a price for a certain period that would insure the prospector a reasonable price for a good profit for his investment and——

Senator JONES of New Mexico. Doctor, take up the item of cost of production. Would you not find a great variance in the cost of production?

Mr. MERRILL. When you say "great variance," I suppose you mean perhaps twice as much in one case as in another?

Senator JONES of New Mexico. Yes.

Mr. MERRILL. I think so; yes, sir.

Senator JONES of New Mexico. What would you do in that case? Would you fix one price for all concerned?

Mr. MERRILL. I had to meet that problem in the arsenic investigation, and my thought was that in these times a man should be content with small profits whose costs were high—a very small profit—and that the other man would have to have his profit, even if it seemed to be unusual, in order to produce the material that was absolutely and urgently needed.

Senator JONES of New Mexico. I can see how you might arrive at some reasonably fair figure with regard to arsenic, because it is a by-product and cared for, as I take it, in practically the same way. There may be a variance in cost of recovery to smelters, but it would not be nearly so variant as the cost of production of manganese, would it?

Mr. MERRILL. Well, at the moment, I do not see that the factors in the production of manganese should vary beyond the reasonable limit—50 per cent, possibly, or possibly 100 per cent.

Senator JONES of New Mexico. I merely ask you this question for information: Have you had any practical experience in mining metalliferous ores in the West?

Mr. MERRILL. Yes, sir; I have been a metallurgical engineer by profession. I have about 25 or 30 patents in connection with the recovery of precious metals, and I have been engaged as a consulting engineer at various western properties since the year 1892.

Senator JONES of New Mexico. Then, I take it, you are pretty well qualified to discuss the question that I had in mind. In what formation, or kind of formation, usually, is manganese ore found?

Mr. MERRILL. It is usually found near the surface, practically near the surface, in California, as I understand it. I am not a specialist in manganese. As I said, my business has been precious-metal mining. I think it is found most largely in the serpentine formation in California, although these gentlemen here can probably give better evidence on that point than I.

Senator JONES of New Mexico. Is it not frequently found in pockets?

Mr. MERRILL. It is, sir, to a greater or less extent.

Senator JONES of New Mexico. When you undertake to produce any ore which is called pocket ore, is not that decidedly a hazardous undertaking?

Mr. MERRILL. It does involve risks which are not involved in more continuous formations.

Senator JONES. Would not the size, or rather the quantity of the discovery in a particular locality affect very materially the cost of production?

Mr. MERRILL. If it were a large property, a large company, with large overhead expenses, I think that would be particularly true. Being a matter usually of a prospector and his help, I can not say at the moment, without investigating the matter further, that the cost of production of a pocket which had 50 tons, which, as is usually the case, is found near the surface would vary widely from a pocket of 500 tons.

Senator JONES of New Mexico. Would you give any consideration to the cost of the discovery and exploration?

Mr. MERRILL. As I say, sir, if it were deep and not comparatively near the surface, I should say that we would have to give more consideration in the case of manganese and the quantity available at any particular opening or shaft than we would under the conditions which occur largely—namely, where it is comparatively near the surface.

Senator JONES of New Mexico. Are there many large known deposits awaiting development?

Mr. MERRILL. In so far as I know there are not many, but there are some.

Senator JONES. The stimulation of production, however, would involve further discoveries, would it not?

Mr. MERRILL. I would say that it would, perhaps. If I might say so, it would involve further developments. There have been a large

number of promising sections and promising localities found, as I understand it, in California, as to which they do not feel justified, or have not felt justified, in pursuing the surface exploration work necessary to develop it.

Senator JONES. Now, would not the distance from railroad transportation be an important factor?

Mr. MERRILL. It certainly would, sir.

Senator JONES. Then, in order to stimulate production to the extent which would seem desirable, it is necessary to go away from the railroads to find ore?

Mr. MERRILL. Well, I should say that it might not be necessary, but we might develop some very material deposits at considerable distances from the railroads.

Senator JONES. I would like to get your actual information on this as nearly as I can. Do you know of sufficient deposits now close to railroad transportation to supply the demand?

Mr. MERRILL. No.

Senator JONES. Then, so far as you know, it would seem necessary to go some distance from railroads in order to obtain a sufficient supply? I mean the present railroads.

Mr. MERRILL. Assuming that they are some distance. It is rather hard, Senator, for me to comprehend your question. Will you put it again?

Senator JONES. I think you have the idea. Will it not be necessary to go away from the railroads to such a distance that the transportation, or the increased cost of transportation, would be a very important factor?

Mr. MERRILL. Yes, sir; I think I should say yes to that.

Senator JONES. Then, in fixing this minimum price, would you fix it so as to take care of a fellow who would have to haul ore 20 or 30 miles to the railroad the same as the price you would fix, the guarantee price, for the concern which is now operating near a railroad?

Mr. MERRILL. If the needs of the country demanded it; yes, sir.

Senator JONES. Well, do the needs of the country demand it?

Mr. MERRILL. In my judgment they do demand it.

Senator JONES. They do demand it?

Mr. MERRILL. Yes, sir.

Senator JONES. Why could not some particular arrangement be made with the individual concern which had to go off from the railroad, without handling it through a blanket minimum guarantee?

Mr. MERRILL. If such an arrangement could be made it would be to the public interest to have it made, in my judgment.

Senator JONES. Could not a scheme of that kind be devised which would be absolutely equitable, or if not absolutely equitable, relatively or approximately equitable, both for the producer and the public? Would not that be better than to take one blanket minimum price on manganese ore?

Mr. MERRILL. Might I ask if you have in mind, sir, a Government manganese administrator, for instance, who would be a clearing house for the purchase of manganese and its distribution?

Senator JONES. I have not in mind any definite scheme, Mr. Merrill. The purpose of the hearings is to try to get at the facts, so that we may work out some scheme. Anything that occurs to your

mind as a suggestion as to how it ought to be handled is what I am after. If this bill does not provide the best way and something else can be suggested which is better, why, it is the better thing that we are seeking here now. I have not in mind any theoretical idea of a general administrator or a general purchaser of ores by the Government, or anything of the sort. I am trying to get your views as to what would be the best way of going about it.

Mr. MERRILL. The reason I asked that question was this: It would be very difficult, as I see it, to adjust private contracts on different prices; that is, it would be very difficult for the Government, on the one hand, to say to this producer, "You shall have $10 for your unit of product," and then say to another producer, "You shall have $6," and then ask one private consumer to take it at the $10 price and another to take the $6 material. That is the reason I asked if you had in mind a Government clearing house for these manganese ores, because that, it seems to me, is the gist of the question.

Senator JONES. What do you think of a Government clearing house? That is what I am trying to get at, among other things.

Mr. MERRILL. My own judgment is that the Government clearing of these things is absolutely vital.

Senator JONES. In other words, the Government, so far as manganese is concerned, should really create what we might, for the sake of a better term, call a Government monopoly and purchase all the manganese ore and distribute that where it ought to go at a fair price?

Mr. MERRILL. Absolutely; just exactly as Mr. Hoover is handling the wheat situation, with the additional power that we should have control over the retailer. I think it is absolutely vital, if we are going to meet the needs of this country and this war goes on for a year or two more. It is absolutely vital and most urgent.

Senator WALSH. I think your attention might perhaps be better drawn to the idea of Senator Jones's if I put it in this way: There are now producers of manganese who are making big money at the present prices. They are making very large profits. They are performing a high public service, but they are getting rich.

Mr. MERRILL. Yes, sir.

Senator WALSH. Now, if we raise the price, say, to $60 a ton and guarantee that for a period of years, in order to get in these producers that are removed from railroad facilities and that produce under adverse circumstances, we will pile so much more on the profits of those who are making big profits now. Now, in view of that situation, you will observe that there is an objection to a guarantee of a minimum price in that it gives aid and protection to those who do not need aid and protection, in order to reach some who do need it.

Mr. MERRILL. Yes, sir; that is a problem that we have to meet, and in my judgment it has to be decided solely by the urgency of the case. Some man in whom the Government shall have confidence ought to have the same power over that situation as, for instance, we have had in connection with arsenic. I am perfectly satisfied that if there were a large or extraordinary profit involved in arsenic, I could go to the producers and call them together and make just such an arrangement as has been suggested, but without those powers, I do not think it can be done.

I think the only way you can reach it, if you want to reach it, is by legislative enactment. Without giving powers to the appointee, it is my thought that it can be done best by a minimum guarantee. If, on the other hand, you are ready and willing to delegate those powers to an appointee, a great deal of money can be saved by such an arrangement as Senator Jones has outlined. But one of the two things should be done. There should be some procedure which will enable this country to get manganese and pyrites, and get them quickly. My touch with the ammunition production, through our control of ammunition, has absolutely convinced me that this is vital.

Senator JONES. Where, in all probability, would these manganese ores be found in the United States if we were to develop a sufficient quantity to supply the requirements?

Mr. MERRILL. That is a question that would be rather hard for me to answer, because that would involve a knowledge of the geological conditions which I myself do not personally have. I think I have heard of a number of promising prospects in Nevada. Of course, I know of a number in California, and I presume there are some through the mountainous regions of the West.

Senator JONES. That was my general idea of it.

Mr. MERRILL. Yes. Possibly there may be some in the South. I do not know, but I think there are.

Senator JONES. Where are those ores, in large measure, principally used?

Mr. MERRILL. Principally used in the East.

Senator JONES. That would involve a question of railroad transportation from the West to the East?

Mr. MERRILL. Yes, sir.

Senator JONES. Rail transportation is somewhat limited at the present time, is it not?

Mr. MERRILL. Yes, sir.

Senator JONES. Would not that be an important element to consider in connection with this subject? Taking into consideration the cost of stimulation and development of these ores, and discovery, even in the West, and the unusual interference with the ordinary laws of trade, had we not better consider, taking these things into account, the advisability of arranging for continuing these importations?

Mr. MERRILL. You are going into the question of priority shipments. That is the question of whether we need men more on the west front, or whether we need manganese more from Brazil, and that is a question I would not feel like passing on.

Senator JONES. At the present time the President has authority to coordinate the various activities of the Government, and under that, it seems to me, it would be advisable and absolutely essential, to get a solution of this identical problem, to take into consideration all of these economic questions regarding trade itself and also the transportation question.

Another thing to be considered is this: We get these manganese ores from Brazil, do we not?

Mr. MERRILL. And from Cuba; yes, sir.

Senator JONES. From Cuba. Brazil is one of our allies in this war. Brazil is purchasing commodities from us and expects to pay for those commodities in shipping her commodities to us, and

must do it. Before absolutely cutting off from Brazil her trade and before putting the burden upon the railroads of transporting ores from the West to the East, and before taking the money out of the Treasury to pay for these ores and the stimulation of these ores to insure and guarantee a profit, might we not well hesitate to go into the question as to how much the tonnage would cost to continue the importation of these ores?

Mr. MERRILL. That would seem to be a thoroughly logical argument, Senator. The fact remains, as I understand it, that the need for men in France at the present time is very great. I was told that the British had even taken ships from the South American trade in order to take care of this shortage.

Senator JONES. I understand that it would be a considerable length of time before we could hope to develop enough United States manganese so as to supply this demand.

Mr. MERRILL. My judgment is that you can meet it to a certain extent very soon. There are a number of properties that people do not feel justified in developing so as to produce manganese at the present moment, but the very instant they know that there is to be a fair price made they will immediately begin production. As far as California is concerned, as I understand it, the traffic from the West is easy—fairly easy—the main congestion being in the East.

Senator JONES. How many concerns are there in this country using manganese ore?

Mr. MERRILL. I assume practically all of the various steel concerns. I do not know just how many that would be. There is quite a number of companies in the country.

Senator JONES. There is quite a number. That is quite true; but as compared with the users of wheat or fuel, they are relatively small?

Mr. MERRILL. Insignificant; yes, sir.

Senator JONES. What would you think of the idea of those people getting together and making some concerted effort in the way of obtaining manganese ore?

Mr. MERRILL. Well, if you will put the steel industry under license, so that you have power over that industry, I think that could be handled, but I do not think it can be in any other way.

Senator WALSH. Are not some of the steel companies now starting development of manganese properties in the West?

Mr. MERRILL. There are, sir. I think they are getting ready to buy what can be procured. I do not think they will answer. I do not think they will take a chance after the war. Whether you can compel the steel companies to take a chance after the war, or whether you are going to say to the prospector and to the developer, "We will protect you"——

Senator WALSH (interposing). What I mean is this: Any prospector out West who has a rather primising manganese prospect can sell it, can he not?

Mr. MERRILL. He can sell up to a certain point; but if he has to face the alternative of sinking a shaft 500 feet in order to further develop his property and he simply has a contract for six months with the United States Steel Co., he would not do it.

Senator JONES. But I understood you to say that it was found near the surface.

Mr. MERRILL. It is found near the surface, but I also said they required development. If you want to use the term, I will say 500 feet added instead of shaft.

The CHAIRMAN. Do you believe that the Government, which is now apparently facing a serious shortage of metals and ores, should depend upon private initiative to solve the problem?

Mr. MERRILL. I do not, not at this moment. In ordinary times my personal belief is that the Government should interfere very little with the normal course of affairs. As I see conditions now, I think that private enterprise can not be relied upon to produce the minerals that we may require.

The CHAIRMAN. Is it reasonable for the Government to expect private enterprises to embark upon enterprises where they are confronted with so many uncertainties under the conditions existing?

Mr. MERRILL. I do not think they can be expected to. I have a number of those propositions before me. The burlap people at the present moment are facing a risk contingent upon the sudden ending of the war on account of their commitments for burlap. They are doing it now, but how long they can do it is a serious question. If they can not continue to do it, we are going to be faced with a shortage of food containers, which is a very serious problem. The same parallelism exists in the mineral situation.

The CHAIRMAN. Would a minimum price high enough to stimulate production be likely to swamp the Government by producing an amount greatly in excess of the demand?

Mr. MERRILL. Not in my judgment; that is, they would not be faced with the possibility of glutting the market, and certainly not for a number of months to come.

The CHAIRMAN. You feel that under the guaranty feature of this bill the matter could be successfully handled?

Mr. MERRILL. I would like to see a man have the power, gentlemen. Get the right man and give him the power.

The CHAIRMAN. What power—the power to fix prices?

Mr. MERRILL. The power to control prices so as to maintain an adequate—not an excessive or insufficient—but an adequate production.

The CHAIRMAN. Would you leave it to that person to determine in certain cases whether or not a certain price should be paid this party or that party?

Mr. MERRILL. I certainly would. Where one man is further from a shipping point than another man would resolve itself into this: He could deal with those two men when the ore reached the consumer or the shipping point, and they would be getting about the same price for the ore?

Mr. MERRILL. Absolutely, sir; and it might be better taken care of if the man had power over the producers and also the consumers.

The CHAIRMAN. To fix a maximum price that could not be reached?

Mr. MERRILL. Certainly.

Senator JONES. Nor to fix a blanket minimum price.

Mr. MERRILL. It is vital. It is a problem that may influence the length of the war. I will not say the decision of the war, but it may influence the length of time which the war may last.

Senator JONES. I realize that it is a very serious problem, and I am endeavoring, so far as I can, to try to meet the situation in the most practical and least expensive way.

Mr. MERRILL. Exactly, sir.

The CHAIRMAN. What would you say, then, relative to the licensing feature of the bill. You are familiar with that?

Mr. MERRILL. Yes, sir. It follows somewhat closely the licensing feature of the food bill.

The CHAIRMAN. Yes.

Mr. MERRILL. If you mean by that control, broad control, I think it is absolutely vital, not only for the producer but also for the consumer.

Senator JONES. The license feature in the food bill was put in there largely for the purpose of preventing hoarding, and indirectly, by general regulation, to control prices, was it not?

Mr. MERRILL. And evil practices; yes, sir.

Senator JONES. But if we are going to cast aside any level in price——

Mr. MERRILL. Any what?

Senator JONES. If we are going to put aside any blanket minimum or maximum price, you can not control that through a license system. I mean, you can not control the situation through a licensing system if you do away with or discard the idea of a general minimum or a general maximum price. How could that be used?

Mr. MERRILL. The license system would control the distribution to essential and nonessential uses.

Senator JONES. By the way, in connection with that licensing system, I was impressed with the testimony of Mr. Hoover, given before the House committee, in which he thought that there was a great deal of lost effort there in the actual clerical work of issuing licenses.

Mr. MERRILL. That applies to the very large and numerous industries, sir, but as to the comparatively smaller industries, like the arsenic industry, it is, of course, a simple thing. There is no waste effort in that that would apply, in my judgment, to most of the commodities listed in this bill.

Senator JONES. What would you seek to accomplish by a license system?

Mr. MERRILL. I would seek to control the distribution to essential uses, particularly as regards such material as pyrites and sulphuric acid.

Senator JONES. And manganese the same way?

Mr. MERRILL. Manganese the same way, but possibly to a lesser extent. Nonessential uses of manganese are relatively unimportant, but they are not unimportant in other minerals.

The CHAIRMAN. You understand that this bill provides that the Government may purchase and then sell these metals and ores?

Mr. MERRILL. That is my understanding; yes, sir.

The CHAIRMAN. Could not that be regulated through sale of metals and ores?

Mr. MERRILL. That is my understanding.

The CHAIRMAN. Could not that be regulated through sale by the Government, in so far as distribution is concerned?

Mr. MERRILL. Yes, sir. If you give them the power to sell and to discriminate as to its use, possibly that could be done. If they specifically state that the Government buys this material to distribute it for essential purposes, that might avoid whatever mechanical and clerical delay might be involved.

Senator WALSH. It does not so provide; but, of course, when the Government is buying and selling, it is authorized to sell to whomever it pleases?

Mr. MERRILL. Then you would feel that the legal status of discrimination was sound; that the Government could not be sued for discriminating.

The CHAIRMAN. That is what I had in mind. If the Government purchases it and then has the power to sell it, it could sell to whomever it pleased, at the same time taking into consideration the needs of the various industries.

Mr. MERRILL. Yes; that would result from blanket powers. I have found licensing, in my work, a useful thing. It puts you in closer touch with the industry, and instead of being opposed by the industries that I have been associated with they have welcomed it. It is giving them a standing.

The CHAIRMAN. Except those that were refused licenses.

Mr. MERRILL. Yes.

Senator WALSH. Mr. Chairman, Mr. Macbeth would like to ask Mr. Merrill a few questions.

Mr. MACBETH. Mr. Merrill, as I understand it, there would be no difficulty in the production of crude arsenic in this country, but the difficulty seems to lie with the refineries?

Mr. MERRILL. I did not quite catch your question.

Mr. MACBETH. In other words, we could produce any amount of crude arsenic we were called upon to provide, but we have not the refining capacity?

Mr. MERRILL. Yes, sir.

Mr. MACBETH. Are you acquainted with the Tacoma smelter?

Mr. MERRILL. I can not say that I am.

Mr. MACBETH. Are you aware of the fact that this smelter has an arsenic plant?

Mr. MERRILL. I am.

Mr. MACBETH. Are there any refineries in Canada?

Mr. MERRILL. Yes, sir; there are at least two.

Mr. MACBETH. The statistics given to us show that about 40 per cent of the arsenic comes from Canada. Does that come in the shape of crude arsenic or refined arsenic?

Mr. MERRILL. Mostly refined. There are one or two properties that produce the crude.

Mr. MACBETH. I believe you stated that the United States Government is now being called upon to provide the English Government with arsenic?

Mr. MERRILL. I said up to a certain time it had been. Ambassador Page has said that they are taking care of it for the moment.

Mr. MACBETH. By Canada?

Mr. MERRILL. Not by Canada. England and Australia have received arsenic from Portugal. During that time the trade path was from Canada to this country. Since the war England has had to get arsenic from different sources and has been getting it from the United States because arsenic was coming to the United States from Canada.

Mr. MACBETH. Are you not aware that the manganese situation is being rapidly met by the steel companies through the substitution of speigeleisen in its place?

Mr. MERRILL. My understanding is that there is a movement in that direction.

Mr. MACBETH. Are you not aware that there was a meeting of about 100 per cent of the steel companies of the United States in Pittsburgh, at the request of Mr. Farrell, of the steel company, to still further increase the use of speigeleisen?

Mr. MERRILL. I had read that in the paper, but I do not know otherwise.

Mr. MACBETH. Are you not aware that there are in the United States, in practically every State in the Union, bodies of manganese ore, running along, we will say, from 15 to 20 per cent, to be used in the manufacture of spiegeleisen?

Mr. MERRILL. I am not aware that it is so widely distributed as that. I do not know, so that I can not answer the question specifically.

Mr. MACBETH. Are you not aware that the Anaconda Co. is at the present time engaged in the construction of plants that will move about one-sixth of the ferromanganese required in this country?

Mr. MERRILL. I have been so advised.

Mr. MACBETH. You are acquainted with Colorado?

Mr. MERRILL. Not well acquainted.

Mr. MACBETH. Do you know of the Tom Boy Mine of Colorado?

Mr. MERRILL. I know of it.

Mr. MACBETH. The Tom Boy Mine has large bodies of rhodocrosite?

Mr. MERRILL. Yes, sir.

Mr. MACBETH. I am informed that in Montana alone—and Montana has a tremendous amount of water power—bodies of low-grade manganese can be called upon to furnish at least 50 per cent of the ferromanganese required in this country. Do you know that that is a fact?

Mr. MERRILL. I do not know. I hope it is.

Mr. MACBETH. You stated, in connection with putting a minimum price on manganese, that you would have to apply it to individual properties?

Mr. MERRILL. You are talking now about a blanket guarantee, as opposed to giving a man control and running that according to the development requirements?

Mr. MACBETH. Yes, sir.

Mr. MERRILL. You are talking about a minimum?

Mr. MACBETH. You would also have to establish a price for each individual property, a minimum price on manganese, owing to transportation and mining operations?

Mr. MERRILL. In my judgment, you would not get your best results that way unless you gave a man the governmental control that I have mentioned heretofore. If you are not going to give any man a full and free hand then, in my judgment, you will get the best results through a minimum guaranty. I do not know whether that answers your question.

Mr. MACBETH. I will say that I have a manganese property. I have knowledge of a very large deposit of manganese located in the Clearwater district, about 25 miles from a railroad. It is one of the largest deposits I have knowledge of. If that should be called upon

to furnish a large amount of manganese under a designated price, the distance from a railroad or from transportation facilities would have to be taken into consideration. Would not all those items enter into that?

Mr. MERRILL. They would have to be taken into consideration. In my judgment, if you assume the cost of mining, putting every possible charge you can put upon it, and then put on the cost of transportation for the railroad haul you will get a figure that would be materially below any price that would be reasonably fixed, in order to stimulate production.

Mr. MACBETH. Another question: In making the price on manganese, you also have to take into consideration the percentage of metallic content in each ore in your property, do you not?

Mr. MERRILL. It is usually taken into consideration. As I understand it, it is a question of so much per unit.

Mr. MACBETH. I say that that would have to be taken into consideration?

Mr. MERRILL. Yes, sir; that would have some bearing.

The CHAIRMAN. Are there any more questions?

Senator WALSH. Not on that, but I want to find out what the next metal in list is that seems to require attention. We have had arsenic and manganese. Have you discussed any other?

Mr. MERRILL. I have not discussed either chrome or sulphur.

Senator WALSH. Let us take pyrites. We import pyrites largely?

Mr. MERRILL. We have imported pyrites largely.

Senator WALSH. Your shipping problem is of interest, so far as that item is concerned?

Mr. MERRILL. Very much so; yes, sir.

Senator WALSH. The necessity for stimulation in the case of sulphur is very much like that in the case of manganese?

Mr. MERRILL. Yes, sir.

Senator WALSH. Let us take sulphur. What is the domestic production of sulphur?

Mr. MERRILL. I could not give you any figures. I am in the Food Administration, and I have had practically nothing to do with sulphur. I can speak only generally of sulphur. I think you have others here far more competent to speak.

Senator WALSH. You do know about the possibility of securing a sulphur supply from pyritic smelters of the West?

Mr. MERRILL. Yes, sir.

Senator WALSH. Where might that supply be obtained?

Mr. MERRILL. I think from almost anywhere in the Rocky Mountains, and also in Missouri.

Senator WALSH. That is, practically all those smelters are treating pyritic ore?

Mr. MERRILL. Yes, sir; I think all of them.

Senator WALSH. Do any of them save any of the sulphur?

Mr. MERRILL. Some of them.

Senator WALSH. Where?

Mr. MERRILL. There are plants at Garfield and there is another plant at Douglas, Ariz.

Senator WALSH. At Garfield?

Mr. MERRILL. Yes.

Senator WALSH. Where is that?

Mr. MERRILL. It is just outside of Salt Lake City.

Senator WALSH. Do you know what the production is there?

Mr. MERRILL. I do not. I am sure those figures are available, however.

Senator WALSH. The sulphur in this case, as I understand it, comes from fuel?

Mr. MERRILL. Comes from roasting the pyritic ores.

Senator WALSH. If the sulphuric acid were precipitated from the fumes of those smelters, do you know whether the domestic demand could be supplied from that source?

Mr. MERRILL. I do not think that there could be any question but that if we used all the sulphur pyrites in this country it would take care of the demand. That would involve such questions of transportation as have been mentioned before and the question of obtaining the supply.

Senator WALSH. It would involve the transportation from smelters only?

Mr. MERRILL. Yes, sir. I think it is calculated the transportation would be less bringing the pyrites.

Senator WALSH. Really, so far as sulphur is concerned, the problem is not actually in finding new sources of supply.

Mr. MERRILL. You are right, sir; it is not.

Senator WALSH. But it is in utilizing the existing supply?

Mr. MERRILL. That is true to a great extent, but it is a question of finding new sources within the economic range of utilization.

Senator WALSH. That is to say, to find pyritic ores somewhere in the East?

Mr. MERRILL. Somewhere in the East, or to develop such a condition as will warrant the shipment of pyrite ores to the East, because the sulphuric acid being such a cheap commodity, and the freight rates being so high, and it being so much heavier per unit of pyrite, it is a question of getting new sources and developing other things in the East, among other things being the coal brasses.

Senator WALSH. That is to say, the difficulties attendant upon transporting sulphuric acid from the West are so many and so great that new sources of supply ought to be developed in the East?

Mr. MERRILL. Yes, sir.

Senator WALSH. What are the difficulties?

Mr. MERRILL. The question of expense is a very serious one, and the question of transportation of sulphuric acid, involving the construction of new tank cars of steel, is very serious. It requires sheet steel, of which there is not enough for present uses.

Senator WALSH. It would be shipped in steel cars the same as petroleum?

Mr. MERRILL. Yes; in steel tank cars.

Senator POINDEXTER. What other possible sources of supply are there in the East?

Mr. MERRILL. They are developing coal brasses.

Senator POINDEXTER. What is that?

Mr. MERRILL. That is a pyrite that exists in coal banks.

Senator POINDEXTER. Is that being done anywhere now?

Mr. MERRILL. It is being done in a number of places.

Senator POINDEXTER. Is that development going on satisfactorily now?

Mr. MERRILL. I can not say how satisfactorily. I know it is going on.

Senator POINDEXTER. Is there anything needed to promote it? If it is going on, what is needed to change the situation?

Mr. MERRILL. The question of how far we should deplete our sulphur stocks in order to meet the present demand is one that is entitled to a great deal of consideration. I am speaking not as an authority in this sulphuric-acid matter, because I have had practically nothing to do with it. The question of whether we should deplete our sulphur supplies, when pyrites might be utilized under certain regulations and control, is one that I think merits the most careful consideration. In other words, we are drawing sulphur supplies at the present time in order to make sulphuric acid to an extent which is considered disquieting by those who are in a position to know; whereas if we had control of sulphuric acid and its production, we might bring into this country a sulphur which is now going to waste through the smokestacks of the various smelters. In other words, the sulphuric-acid man is going to buy from the cheapest source of sulphur. That is what he is doing now.

Senator WALSH. If we should develop or discover new sources of supply in the East, it would have to be transported to the point of use in the same way?

Mr. MERRILL. Yes, sir; but the distance would be very much shorter and, of course, the great consumption is in the East.

Senator WALSH. Is there any sulphuric acid moving from the West to the East now?

Mr. MERRILL. I do not know whether any is being brought in from Garfield or not. When you say "from the West to the East," you mean the far West?

Senator WALSH. I mean from Arizona, Utah, and Montana.

Mr. MERRILL. I can not answer that question, but I doubt it. Mr. White, can you say?

Mr. WHITE. There has been some consideration given to shipping small quantities of western acid to the East. The larger part of the western acid is used for local purposes, particularly for the leaching of copper ores, at Garfield, Anaconda, and in Arizona.

The tank-car situation has been so bad that it has been impossible in many cases to ship acid from the eastern plants to the munition plants using it; consequently very few tank cars have been available for any far Western movement.

Senator WALSH. Then, really it is very largely, as the matter is presented to us, and as far as sulphur is concerned, a matter of furnishing tank cars for transportation?

Mr. MERRILL. As I see it, that industry would seem to be not the vital factor. It seems to me that the vital factor is to produce the raw material from which the sulphuric acid is made in sufficient quantities to take care of our requirements, so that there may be no shortage, and so that munitions plants will not be short of sulphuric acid.

Senator WALSH. Yes; but it is either a question of supplying the needs of the western fields, which involves the tank-car problem, or it

involves the discovery of new and unknown sources of supply in the East, does it not?

Mr. MERRILL. I should say that it involves both the discovery of new supply and the further development of existing supplies.

Senator WALSH. What prospect is there of finding new sources of supply in the East?

Mr. MERRILL. That is the very reason why I think the matter of coal brasses is an extremely important one.

Senator WALSH. Of course, all coal contains more or less sulphur.

Mr. MERRILL. Yes, sir.

Senator WALSH. To what extent has the process of taking sulphur from coal deposits commercially progressed?

Mr. MERRILL. I can not give you absolute details.

Senator WALSH. That is the same problem. The coal is burned and the sulphur escapes in the fuel.

Mr. MERRILL. Yes; but there has been a considerable amount of the coal brasses.

Senator WALSH. Up to the present time this has been inconsequential?

Mr. MERRILL. I would not say that.

Senator WALSH. Let us take the case of ordinary bituminous coal. What percentage of sulphur would ordinarily be found in it?

Mr. MERRILL. I can not say, sir; but I do know that the coal brasses are now being utilized and are becoming more and more a factor in the production of sulphuric acid every day.

Senator WALSH. But the pyritic ores, copper and lead, contain many times the quantity of sulphur, or many times the amount of sulphur, found in ordinary coal, do they not?

Mr. MERRILL. Per ton; yes, sir.

Mr. WHITE. May I make a little statement, Mr. Chairman?

The CHAIRMAN. Yes, Mr. White.

Mr. WHITE. In the past some 20,000 or 30,000 tons of pyrites from coal mines have been produced and used by acid makers. This material was imperfectly prepared and was open to objection by some acid makers. Recently simple processes of preparation have been worked out which will produce a high grade of satisfactory material. It is estimated that at least from 200,000 to 300,000 tons of this material might be produced. It occurs as small veins, and nodules associated with coal in the mines.

It is now picked out and left in the mine as refuse. It could be recovered and brought to the surface with relatively little difficulty. The chief difficulty in a further use of this material at the present time lies in the fact that it is stated by the people who contemplate producing it that it will cost relatively more than the cheap price at which sulphur is now being furnished to certain acid plants, under special prices conceded to the Government.

With regard to the further production of acid by the western smelters, the utilization of these fumes would require the construction of new plants, which would take at least several months to build. in addition to the difficulty in the tank car situation. The most logical consideration would be the production of acid at the smelter and its utilization at the new munition plant which might be built in the neighborhood. The western smelter acid would not relieve the

threatened shortage of acids for the fertilizer plants in the South. These plants are equipped to produce acids and simply lack the raw material which they formerly used—pyrites.

If these existing plants are to operate they must use either pyrite or sulphur. The sulphur supply does not seem to be adequate to meet the total requirements; consequently, it seems logical to develop existing pyrite deposits which are located within a relatively short distance of the acid plants in the South.

Mr. MACBETH. To my knowledge the situation in respect to many of the metals you have under consideration by your committee has been met by the War Industries Board, of which Mr. Yeatman is chairman, and I would suggest that Mr. Yeatman be requested to appear before your committee in order to state the conditions, as I believe it would result in the elimination of a number of metals that you have now under consideration, and would considerably expedite the hearing before your committee.

The CHAIRMAN. Are there any further questions that any member of the committee would like to ask Mr. Merrill?

Senator JONES. I would like to ask Mr. Merrill if he has special information regarding the supply of sulphur in Louisiana and Texas?

Mr. MERRILL. I have not, sir.

The CHAIRMAN. If that is all, we will adjourn until 10 o'clock in the morning.

(Thereupon, at 12.10 o'clock p. m, the committee adjourned until to-morrow, Thursday, May 9, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

THURSDAY, MAY 9, 1918.

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met at 10 o'clock a. m., Senator Charles B. Henderson (chairman) presiding.

Present: Senators Shafroth, Jones of New Mexico, Ashurst, Sterling, and Sutherland; also, Dr. Van. H. Manning, of the Bureau of Mines, and Mr. George Otis Smith, Director of the Geological Survey.

The CHAIRMAN. The committee will come to order. Mr. Friedman, do you desire to make any statement to the committee?

Mr. FRIEDMAN. Yes, sir.

## STATEMENT OF MR. L. A. FRIEDMAN, LOVELOCK, NEV.

The CHAIRMAN. Mr. Friedman, state your name and residence.

Mr. FRIEDMAN. My name is L. A. Friedman; I reside at Lovelock, Nev.

The CHAIRMAN. What is your business?

Mr. FRIEDMAN. Mining.

The CHAIRMAN. What are the principal ores mined by you?

Mr. FRIEDMAN. Silver and gold and tungsten.

The CHAIRMAN. Where are your mines located in Nevada?

Mr. FRIEDMAN. In Humboldt County, Nev.

The CHAIRMAN. How long have you been engaged in mining tungsten?

Mr. FRIEDMAN. Well, not quite a year. I have been interested in tungsten mines for the last three or four years, but have not gone into it actively until about eight or nine months ago.

The CHAIRMAN. Please state to what extent you are now engaged in mining tungsten?

Mr. FRIEDMAN. Well, I guess I am the largest tungsten producer in the State of Nevada at the present time. We produce about 50 tons of scheelite concentrates a month, and we are now starting to build a mill which will be completed in from 60 to 90 days, and we will be able to produce about 100 tons of tungsten a month.

The CHAIRMAN. Please explain to what uses scheelite is put.

Mr. FRIEDMAN. It is used for toughening and hardening steel. They line cannons with it, and also repeating guns and rapid-fire guns.

Senator SHAFROTH. Is it a sort of lining that you slip in?

Mr. FRIEDMAN. I do not know exactly how they do it, but I know that that is what they use it for.

Mr. MACBETH. Mr. Chairman, I think I can explain that. The scheelite is ground in very fine particles, and they put a very small quantity in the furnace at a time.

Senator SHAFROTH. While the firing is going on?

Mr. MACBETH. Yes; while it is in a molten condition.

Mr. FRIEDMAN. That is what it is used for—in toughening steel—but it is so very costly that the inner portion of the guns is the only portion that really contains tungsten.

Mr. MACBETH. It is used for the lining.

Mr. FRIEDMAN. I understand it is about 20 per cent. It is only the inner lining. It will stand the heat where no other metal will stand it.

The CHAIRMAN. It is then poured into the molten matter?

Mr. MACBETH. That is what I understand.

Mr. FRIEDMAN. It is done in that way to some extent, but not very much of it. Most of it is made into tungstic acid, and the acid is poured into the furnace as the melting is being done.

Senator SHAFROTH. And becomes part of the steel?

Mr. FRIEDMAN. Yes; becomes part of the steel. The average steel is about 58 per cent tungsten. That is the very highest grade of steel.

Senator SHAFROTH. How does the quality of hardening made by tungsten compare with that of other metals?

Mr. FRIEDMAN. Well, I think it has that quality to a greater extent than any other metal except molybdenum. I understand it takes about half a ton of molybdenum to make up a ton of tungsten.

Senator SHAFROTH. It has twice the strength?

Mr. FRIEDMAN. Yes, sir. For some cause or other, I think, our local manufacturers use a very little molybdenum; I do not know why.

Senator SHAFROTH. Which is the rarer metal, so far as manganese is concerned?

Mr. FRIEDMAN. Molybdenum, by all means.

Senator SHAFROTH. What is the production in the United States of those two metals?

Mr. FRIEDMAN. I do not know what it is of molybdenum, but of tungsten I think last year there was produced somewhere between four and five thousand tons.

Senator SHAFROTH. And you do not know how much molybdenum?

Mr. FRIEDMAN. No, sir; but I doubt if there has been a thousand tons produced. Of course I am not positive of that.

Senator SHAFROTH. And how is this distributed in the United States?

Mr. FRIEDMAN. I think tungsten is largely found in Colorado, Nevada, California, and Idaho.

The CHAIRMAN. Are there any other mills besides the one you speak of that you know of?

Mr. FRIEDMAN. There is one custom mill in Nevada that is treating tungsten ore. That is the only one I know of—there is; yes—that is in Nevada. There is another mill in northern California called the Atolia Mill. They have been the largest tungsten producers in the United States, I guess, but their mines are very deep and hard to work.

The CHAIRMAN. Where is this mill in Nevada?

Mr. FRIEDMAN. About 18 miles west of Lovelock. It is just a siding called Toulon.

The CHAIRMAN. Is that your mill?

Mr. FRIEDMAN. No, sir; that was built by the Billesby Co., of Chicago, two years ago. Their mine played out. Tungsten is more or less in bunches, and they are now running the mill as a custom mill.

Senator SHAFROTH. Can you tell what the price of tungsten is now and what it has been?

Mr. FRIEDMAN. Well, the price of scheelite concentrates—that is, 65 per cent—is along about $23 a unit at this time, which is 20 pounds. However, that price is based on 100 per cent tungstic-acid content.

Senator SHAFROTH. Is that a high price or a low price for tungsten?

Mr. FRIEDMAN. I consider it a very fair price. Of course about a year and a half ago or two years ago it went up to $90 and to as high as $105. Before that I think the lowest it ever went was along about $5.50, $6, and $7.

Senator SHAFROTH. Could it commercially be produced at that price?

Mr. FRIEDMAN. No, sir.

Senator SHAFROTH. The mines shut down, did they?

Mr. FRIEDMAN. Well, the mines that have been established, like in the Boulder district in Colorado, may be running, but they are just barely getting along. They were running during that time because they were established and could mine rather cheaply at that time. Those people to-day could not operate without a loss, because their mines are made deeper, and they have more or less water to contend with.

Senator SHAFROTH. I have received various letters of protest against even the present prices, claiming that they can not produce any quantity in this deep mining, and that there is no profit in it whatever at $23 a unit. Now, what have you to say as to that?

Mr. FRIEDMAN. Well, that may be true. I do not know about that, but I know that we can make all the money that any concern is entitled to make at that price of tungsten ourselves.

Senator SHAFROTH. Where is that, in Nevada?

Mr. FRIEDMAN. Yes, sir.

Senator SHAFROTH. Now what price, if any price is to be fixed, would you suggest for the production of tungsten?

Mr. FRIEDMAN. Well, I do not believe that a satisfactory price could be fixed by the Government on tungsten, either as a minimum or as a maximum. I do not see how you could do it.

Senator SHAFROTH. Tell me what you think of the policy and theory of fixing, first, a minimum price on these rare metals; that is, how much the Government should guarantee that the metals shall bring?

Mr. FRIEDMAN. Well, I do not know that I would be prepared to state that. I will tell you that I do not think that the production of tungsten is any serious matter. I think we can produce all the tungsten that this country needs.

Senator SHAFROTH. Without any maximum or minimum price?

Mr. FRIEDMAN. Yes, sir; but the trouble is now we have no market for our tungsten. It seems that if we get a carload of concentrates

and wire for a price to the consumers, they will never give us a price. They will wire back, "What will you take for it?" We can not get any price. I have sold a carload of scheelite concentrate for $24.50, when I knew that the small producers were selling it at from $18 to $20, the same as the people who bought at the mine. It is something that there does not seem to be any established market for.

Senator SHAFROTH. And they go to the market and get it at the lowest price they can?

Mr. FRIEDMAN. Yes.

The CHAIRMAN. I wish you would explain that fully, as you are a producer, as to how the metal is handled, and the different courses it goes through.

Mr. FRIEDMAN. Well, when I sell tungsten I sell it to a chemical company, or a so-called reduction company. They seem to buy just as cheaply as they can. If I wire to half a dozen houses, I will not get a reply for about two days, and then we will get a reply from one or two, and the difference is only about 20 or 25 cents a unit. So evidently this thing goes to a headquarters at some place before I get a reply. Now, at $24 a unit on our 65 per cent product—the price being based on 100 per cent tungstic acid content—gives us about 85 cents a pound. The loss in treatment, in converting that into ferrotungsten, is about 12 per cent.

Senator SHAFROTH. What do you mean by "ferrotungsten"?

Mr. FRIEDMAN. Ferrotungsten, when melted up, looks very much like pig iron—that is the raw material. It is then ground up and mixed with other steel as they melt it.

Senator SHAFROTH. And when it is mixed with steel, it then becomes ferro?

Mr. FRIEDMAN. No, sir; ferrotungsten is concentrates. It is melted, and the product is ferrotungsten. Then it is ground up and converted into tungstic acid, and is mixed with steel, at about 15 per cent to the steel.

Now, the loss in that treatment is about 12 per cent, and the cost is roughly estimated at about 25 cents a pound, depending on the electric power—they call it electric power. So our concentrates will cost the concern that buys them about $1.25 a pound. Now, they sell that to the steel companies at from $2.20 to $2.80 a pound.

Senator SHAFROTH. Why don't you sell that to the steel companies?

Mr. FRIEDMAN. I have found that the steel companies own the so-called Chemical Reduction Co. I know that to be a fact.

Senator SHAFROTH. Then they wont buy it from you at all?

Mr. FRIEDMAN. No, sir. I was talking to a man about a month ago with regard to putting in a ferrotungsten plant on the coast, at San Francisco. I told this party I was going to back that party financially, and have the plant larger so that we could make ferrotungsten there. They said, "If you do, you can not sell the ferrotungsten." I said, "Why?" The party said, "I can not sell ferrotungsten." I asked him why, and he said that the producers would not buy it, and when I asked him why he said, "They are making it themselves."

The CHAIRMAN. You said "producers": you meant consumers.

Mr. FRIEDMAN. The consumers; yes. I think that is a serious trouble in the tungsten situation.

The CHAIRMAN. Then you would get for your tungsten, as a producer, about $1.20 to $1.25 a unit?

Mr. FRIEDMAN. Yes, sir.

Senator SHAFROTH. A ton, you mean?

Mr. FRIEDMAN. A ton. It is the finished product, the tungsten.

The CHAIRMAN. That is, it is sold through some intermediate source to the real consumer?

Mr. FRIEDMAN. Yes, sir. We only get 85 cents while the price is based at about $1.20 a ton, but our profit is only 65 per cent pure, and the price is based on 100 per cent tungstic acid content. So we get about 85 cents a pound.

Senator SHAFROTH. For 65 per cent tungsten?

Mr. FRIEDMAN. Yes, sir.

The CHAIRMAN. And the person to whom you sell it then sells it to the real consumer?

Mr. FRIEDMAN. Yes, sir; to the consumer.

The CHAIRMAN. And gets a profit——

Mr. FRIEDMAN. Of about as much as we get for it in the first place.

The CHAIRMAN. Yes. And of course the basis of that price would be used in fixing the price of steel?

Mr. FRIEDMAN. I suppose so.

Senator SHAFROTH. You state in your judgment you do not see that any minimum price can be fixed for tungsten. Will you state your reasons for believing that?

Mr. FRIEDMAN. Well, in the first place, I think it would be hard to figure out what the real production of tungsten would be at any fixed price. I can not see any reason why, with the tungsten deposit that we have, the law of supply and demand should not govern the price the same as it does in other commodities, provided it could be gotten from the producer to the consumer. Now, it is a big gap that takes up 100 per cent or 50 per cent.

Senator SHAFROTH. Would there be any difficulty in fixing a reasonably uniform price in guaranteeing the amount by reason of the different conditions of the mines, or the fact that in one mine the ore can be produced at a good deal less price than other mines?

Mr. FRIEDMAN. You might fix a price——

Senator SHAFROTH. I am talking now about a minimum price.

Senator JONES of New Mexico. A blanket minimum price.

Senator SHAFROTH. Could you fix a blanket minimum price?

Mr. FRIEDMAN. I suppose that could be done.

Senator SHAFROTH. It would be, however, subject, I presume, to large profits by one concern and small profits by another concern?

Mr. FRIEDMAN. That is true; but I do not believe that would affect the mining as much as you would think, in the first place. Take, for instance, the tungsten producers. They have discounted that already, and if you want to get a tungsten production, you have to get it from the large producers and mine operators. What is the use of talking about fixing a price for the prospectors when they do not produce ore? Those little prospects would not produce anything it is the larger producer that you have to depend on for your product.

Suppose I go and buy a mine within 5 or 10 miles of a railroad. Say I pay $100,000 or $150,000 for it. I know there are a great

many of them that run from 65 to 75 miles from a railroad that I could buy for $30,000 or $40,000——

Senator SHAFROTH. Just as a good prospect?

Mr. FRIEDMAN. Yes, sir; just as a good prospect, but they pay the big price in order to get the mine fairly well located. We discount that profit, don't you see? We spend perhaps $100,000 in development and another $150,000 putting in the plant. There is a $350,000 investment. We can produce tungsten cheaper than the other fellow who is a long way from the railroad, but we have that amount of money invested and we have got to get it back, and if we see that we could not get it back we would not make the investment in the first place.

Senator SHAFROTH. Then what would you advise to be done for the purpose of increasing the quantity of tungsten?

Mr. FRIEDMAN. Well, I do not know. This proposition has come upon me very suddenly. I am just here by accident, and I have not given the matter any thought at all.

The CHAIRMAN. Keep the price up, I suppose?

Senator SHAFROTH. In what manner would you suggest that the price can be kept up?

Mr. FRIEDMAN. If there was any way whereby the Government could do the purchasing and the distributing of tungsten, I think that would solve the problem, if that can be done. I do not know that it can be or how it can be.

Senator SHAFROTH. Now, what do you say as to fixing a maximum price on tungsten?

Mr. FRIEDMAN. Well, if you fix a maximum price high enough, I think you would have an overproduction of tungsten. I would not like to see that done for this reason, that it might help operators who would just jump into the business on account of these enormous prices, and they would make some money in a short time. Those people who are in the business to stay might find the Government loaded up with a million dollars' worth of this high-priced tungsten, and it would mean the sudden end of every tungsten mine in the country. They would have to shut down.

Senator SHAFROTH. By a maximum price I do not mean that the Government must take it at that price. What is understood by a maximum price is that you can not sell for a greater amount than the maximum price that would be fixed by the Government, like, for instance, the price fixed on wheat at $2.20. You can not sell it for any more than that now. You could sell it lower than that. The Government has fixed a maximum price at which you can get a bushel of wheat. If you would have a minimum price at $2 a bushel, it would mean that if the party could not get any more the Government would guarantee him against loss.

Now, on the question of fixing a maximum price of tungsten, what would you suggest as to that, whether there should be a maximum price or not?

Mr. FRIEDMAN. I can not see what the object of a maximum price could be, because the tungsten producers are all willing to sell it, so far as I know, and unless there is a market where they could dispose of that product——

Senator SHAFROTH. Well, the only thing that occurs to me with regard to the maximum price is that if we fix a maximum price too

low, then, of course, you are going to discourage production, because they will say, "We can not sell it for any more and can not produce it for that amount, and therefore we must quit." The minimum price has a different purpose. It has the purpose of guaranteeing the man who locates a mine or starts the development of the mine, and he will say, "I can rely upon, say, $1.25 per pound, and I can figure out that I can make money; I may sell it for a higher price than that price if the supply and demand will raise it higher, and by reason of that I am going to undertake this venture." It is a kind of guarantee of a certain amount, and higher if the market will justify it.

That, it seems to me, will produce increased quantities, but beyond the maximum price the reverse condition exists unless you fix a maximum price so high there is no danger of supply ever producing that maximum price.

Mr. FRIEDMAN. If you fix a minimum price in order to have all the mines participate in it, I think it would have to be fixed at along perhaps the price it is now—$24.25, or between $24 and $25.

Senator SHAFROTH. Then, do I understand you to say you would not fix any maximum price at all?

Mr. FRIEDMAN. No, sir; I would not.

Senator SHAFROTH. What do you think of the provision of the bill concerning the issuance of licenses and the control, by the refusal to grant a license, or the revocation of a license, of what should be charged as a reasonable profit on the various items that go into the production or manufacture of the products from tungsten?

Mr. FRIEDMAN. Do you mean in the mining end of it?

Senator SHAFROTH. Yes; in the mining end.

Mr. FRIEDMAN. I do not think that there could be any price fixed, because no two mines cost the same in production, and no two mines are handled the same or equipped the same. When we got our property thoroughly equipped, I think we will produce tungsten at less than 20 per cent of the cost of the average production of tungsten.

Senator SHAFROTH. It is contended, I understand, that on account of this irregularity in price there had to be a minimum price made on tungsten for each small district or each mine, and thereby to insure the increased production of that metal, and it is contended that inasmuch as those do vary very much—that is the profit that can be made by reason of distance from railroads and from other causes that enter into it—that therefore there ought to be this licensing for the purpose of taking away the license from a man who makes an exorbitant profit. The contention upon the other side is that there should be no such thing as licensing, because it can be used for the very purpose of fixing a maximum price, and inasmuch as we have the machinery for preventing excess profits by means of taxation, in the nature of war excess-profit tax, that that will make an equalization in profits of those people——

Mr. FRIEDMAN. I think it does.

Senator SHAFROTH. By virtue of favorable conditions they will make an enormous profit, and the man has got to pay to the Government a large portion of it.

Mr. FRIEDMAN. The Government gets nearly all of it anyhow, or the biggest portion of it.

Senator SHAFROTH. Then, do I understand you to say that you do not believe in the licensing system being applied?

Mr. FRIEDMAN. I do not; and if you inaugurated that you would not get the big producers, who you have to depend on for your tungsten, to put in their plants and make all that investment, because there are not very many men out West who are willing to take a three or four hundred thousand dollar chance on somebody else coming out and telling them what profit they can make, because in the first place, on a tungsten plant you will have to figure on getting your money back within a year or two, and if not, it will result in a total loss. If not, you are not safe in making the investment, because tungsten might be very uncertain.

Senator SHAFROTH. Then I understand you say that you do not favor either a minimum price or a licensing system or a maximum price?

Mr. FRIEDMAN. Well, if any, I should favor a minimum price.

Senator SHAFROTH. You think that is better?

Mr. FRIEDMAN. Yes, sir.

Senator SHAFROTH. Is there any possibility of getting any large quantity of tungsten? In other words, is the metal here in this country where large quantities can be produced?

Mr. FRIEDMAN. Yes, sir. If the present price of tungsten was assured to the producers for any length of time, or if the producers were not afraid of the buyers of tungsten, so that they would put in the necessary plants, we have enough tungsten, I believe, in our county, to supply the United States.

Senator SHAFROTH. What county is that?

Mr. FRIEDMAN. Humboldt County, Nev. Some of the plants are 50 or 60 miles from a railroad. The plant at the railroads cost a great deal of money. We are not so much afraid of the demand for tungsten as we are of the buyers. The way it is being handled now we never know what we can get for it, or if we can sell it at all.

Senator SHAFROTH. Have you any suggestion as to the passage of any law that would prevent combinations, as you have suggested they exist between the steel manufacturers and the persons to whom you sell your product?

Mr. FRIEDMAN. No, sir.

Senator SHRAFROTH. There are certain laws now called antitrust laws that prevent combinations in restraint of trade. Can you make any suggestion as to any improvement in them that would reach the question that we are now considering?

Mr. FRIEDMAN. That is entirely out of my line. I could not answer that question.

Senator SHAFROTH. Do you think that the fixing of a war-profit tax on tungsten, for instance, or on profits generally—whether it be tungsten or any other mining product that is being dealt with—do you think that will have a tendency to come nearer putting the producers of tungsten upon a more equitable basis as to their product?

Mr. FRIEDMAN. Yes, sir; and that has already been done. If it had been done to any greater extent, then there would not be anything left at all.

Senator SHAFROTH. That is, if the rate were made here?

Mr. FRIEDMAN. Yes, sir; there would not be anything left after paying the excess war-profit tax any everything else that we have to pay.

Senator SHAFROTH. It would have this tendency, that where a mine was not favorably located and the profit was small, the producer would not have to part with as much of a tax as a man who is near the railroad and who makes an excess profit?

Mr. FRIEDMAN. That is the reason I do not think that any such price needs to be established that makes a difference between the various properties because the taxes as we pay them now govern that absolutely.

Senator SHAFROTH. That regulates that better than any particular price-fixing, you think?

Mr. FRIEDMAN. Yes, sir; it does now. In the mine where we make big profits, our total taxation is along about 60 per cent, and in some instances it runs higher than that. That equalizes the other fellow who has a great deal of expense in getting his ore out. That is all deducted from his profits, and he does not pay the tax.

Senator SHAFROTH. And if his profit is only a little over 15 per cent, he has to pay very little taxes at all?

Mr. FRIEDMAN. Practically no tax.

Senator JONES of New Mexico. I would like to ask you a few questions.

I notice in the data which has been furnished us by the Geological Survey that in 1916 the domestic production of 60 per cent tungsten was 5,849 tons, valued at $11,965,600, at a price of $34.15 per unit; and in 1917 the production decreased about a thousand tons to 4,800 tons, of the value of $5,760,000, an average price per unit of $20, and that the imports for 1916 were 3,973 tons, with the value of $7,353,691, or approximately $18.50 per ton.

In 1917, the importation increased about a thousand tons, being 4,876 tons, of the value of $4,465,594, or about $915 per ton, or approximately one-half the value per ton in 1917, as of 1916.

Can you furnish an explanation, first, as to the cause of the reduction in price of the domestic ore per unit from $34.15 to $20?

Mr. FRIEDMAN. No, sir; I could not. I do not know what caused it. As I have stated before, I think the price is quite thoroughly controlled by the people who are using it, and the producers will have to take what they offer them. Sometimes many of us believe we could not use it at all.

Senator JONES of New Mexico. How many concerns are there which buy this tungsten ore from the producers?

Mr. FRIEDMAN. Oh, I should judge there are 15 or 18 of them.

Senator JONES of New Mexico. A relatively unlimited number?

Mr. FRIEDMAN. Yes, sir.

Senator JONES of New Mexico. Now, where are those 15 to 18 concerns located?

Mr. FRIEDMAN. Some of them are in New York and some are in Perth Amboy. The greater portion of them are around Pittsburgh and Latrobe, Pa.

Senator JONES of New Mexico. They are in the East, near the steel plants?

Mr. FRIEDMAN. Yes, sir; they are evidently quite closely allied to the steel industry.

Senator JONES of New Mexico. Now, what you have said about these buying concerns being connected with the steel plants is very interesting, and I should like to get all the information in detail which you have upon that subject. What detailed information have you, or what leads you to the conclusion that you have announced?

Mr. FRIEDMAN. Well, for instance, I go into Pittsburgh to sell a carload of concentrates—this happened, for instance, a couple of days ago, that I had that same experience. I called up the office of a chemical company and asked for the manager. The girl told me I would have to call up another number. I asked her who that was and she said a certain steel company, and I asked her what he was doing over there and she said, "He is in the plant; he is manager of that steel company." I told her I thought he was manager of this concern here. She said "He is; he is manager of both." So that when two concerns have one manager, they must be pretty closely connected.

Senator JONES of New Mexico. Have you any objection to giving the name?

Mr. FRIEDMAN. I would not like to do that. I will see that you get it before I leave here, but I would not like to give it now.

The CHAIRMAN. One of the companies was a purchaser——

Mr. FRIEDMAN. And the other a consumer.

The CHAIRMAN. Could you deal directly with the consumer?

Mr. FRIEDMAN. No, sir.

The CHAIRMAN. You had to deal with this purchaser, who in turn dealt with the consumer?

Mr. FRIEDMAN. It was under the same management.

The CHAIRMAN. And the price you got from the purchaser was anywhere from 50 to 100 per cent less than what the producer sold to the consumer?

Mr. FRIEDMAN. Yes, sir. We get about 85 cents, and I understood from this man himself that they were selling to the steel company at $2.20 at that time.

The CHAIRMAN. And you were getting 85 cents?

Mr. FRIEDMAN. Yes.

The CHAIRMAN. In other words, the producer was not getting the full value of the metal furnished to the seller in that case?

Mr. FRIEDMAN. No, sir; I think that is the great trouble in the production of tungsten.

The CHAIRMAN. You stated that you thought the Government might buy these metals and ores and then distribute them to the consumers according to their needs and requirements?

Mr. FRIEDMAN. Yes; their needs. It seems to me that that would be the best solution of that problem.

The CHAIRMAN. Now, if that provision should be adopted and the Government purchased these rare metals that are described and mentioned in this bill, and then be a sort of distributing agency of them, would it not be necessary for the Government to have some control and regulation of the business?

Mr. FRIEDMAN. You mean in the operation of the mines?

The CHAIRMAN. No; not in the operation of the mines, but take the licensing feature that was just gone into by Senator Shafroth, would not the licensing feature operate to adjust these profits that are made now by the steel companies?

Mr. FRIEDMAN. I do not know as to that.

The CHAIRMAN. Could not this licensing feature be used so as to protect the producer and bring the producer's product straight to the Government and let the Government sell it then to the consumer, which would act to the benefit of the producer?

Mr. FRIEDMAN. It depends upon what restrictions you would place on the industry. If you would not scare away the investors who have got to put in a lot of money before they can produce this material, it would be all right.

The CHAIRMAN. I understood you to say that tungsten was found largely in pockets?

Mr. FRIEDMAN. It is, to a great extent.

The CHAIRMAN. To what extent is it found outside of the pockets?

Mr. FRIEDMAN. We have one mine where the ore body seems to be just as permanent as in a silver mine. If you open it up 700 or 800 feet deep and 3 or 4 feet laterally, it is good.

The CHAIRMAN. Are there many of those mines in this country?

Mr. FRIEDMAN. There are only two in our State that I know of. I am not enough posted on the Colorado mines to state what occurs there.

The CHAIRMAN. It is a rather risky business anyhow.

Mr. FRIEDMAN. It is a risky business in this way: If you are going to make any appreciable production, you have to have a plant and mines thoroughly developed in order to get sufficient tonnage to keep the plant going. That means anywhere from $300,000 to $400,000. At the present price of tungsten, anyone can well afford to do that, but if anything should happen that would put tungsten down to where it was before the war, it would result in almost a total loss.

The CHAIRMAN. In other words, if you go to all that expense in preparing to produce tungsten, you want to be assured of a market so that in a number of years you would get back the amount invested in the business?

Mr. FRIEDMAN. Yes, sir; in a few years and the price would have to be about what it is at this time.

Senator JONES of New Mexico. In that connection, I understood you to say that you were building a plant now, and that it would be completed within a short time?

Mr. FRIEDMAN. Yes, sir; we have part of the foundation completed, and have got quite a good plant up. The plant is being completed now.

Senator JONES of New Mexico. You have not depended upon any Government guaranty in order to put in your plant, have you?

Mr. FRIEDMAN. No, sir; I am willing to take that chance but I do not know that everybody else is. I have told you what tungsten is selling for and what it is worth now. We can produce it in our country for what it is selling at now. I do not know whether the Colorado operators can; I doubt it. Their mines are deeper and they have a good deal of water to contend with.

Senator JONES of New Mexico. I understood you to say also that in your country you could produce all that was necessary.

Mr. FRIEDMAN. I could, if we knew we could depend on these prices for any length of time so that we could afford to put this plant away from the railroad. My plant will only be a few miles away from a main line of the Central Pacific Railroad. That mine

would be worth a good deal of money, much more than if it was out 50 or 60 miles. If it were, it would not be worth a cent, when you consider the dismantling and getting everything back to the railroad.

Senator JONES of New Mexico. Now, to justify a price that would warrant your going back from the railroad and putting up a plant, you would have to have a guaranty—a man having a plant near a railroad with very large returns, would he not, if you put the same price on your product that you would put on the product remote from the railroad?

Mr. FRIEDMAN. Yes; but I have already got a big investment in there, for which purpose you would guarantee the other man his price. It would not cost any more, or practically not any more, 40 or 50 miles, or 60 miles, away than 10 or 12 miles. The only difference would be in freight and in hauling the machinery out. Then he could make as much profit as I could make, the only difference being that I would have my investment there, and he could get investors in order to make his.

Senator JONES of New Mexico. Could he not get the ore hauled to the railroad?

Mr. FRIEDMAN. There is very little to haul after the railroad is constructed, excepting concentrates, which is a very small amount. A carload of concentrates is worth $60,000 or $75,000.

Senator JONES of New Mexico. If transportation is not an important factor, why can he not go out there and put up his plant with just as much assurance as you can near the railroad?

Mr. FRIEDMAN. Well, I guess he can, if you can find anybody to do it. There are not very many men who have the nerve to put up a plant at most any place.

Senator JONES of New Mexico. What are the advantages of putting it where you put it, over and above the advantages of putting it in at the other place?

Mr. FRIEDMAN. In case the price would get to where you could not run, that mill would be worth a great deal more close to the railroad than it would be far away from the railroad, because you might treat custom ores, or convert your mill into a mill that would treat ores of any character—silver ores, or gold ores, or antimony, or anything of that character.

Senator JONES of New Mexico. In other words, the value of the salvage in the event of the petering out of the industry.

Mr. FRIEDMAN. Yes, sir; the mill might be converted into some other mill, where the ores would be hauled to it by the railroad. When you haul ore 60 or 75 miles, it is a very expensive way of hauling it, but in hauling concentrates it is not bad.

The CHAIRMAN. How far is your mill from the mine where you get the ore?

Mr. FRIEDMAN. Tungsten?

The CHAIRMAN. Yes.

Mr. FRIEDMAN. That is right at the mouth—it comes from the shaft right into the mouth of the mine.

The CHAIRMAN. There is no hauling of the ore at all from the mine to the mill, is there?

Mr. FRIEDMAN. No, sir.

Senator JONES of New Mexico. What is going to be the capacity of this plant that you have erected?

Mr. FRIEDMAN. About a hundred tons a day of ore.

Senator JONES of New Mexico. What would that amount to in 60 or 65 per cent concentrate?

Mr. FRIEDMAN. About 100 tons—from 80 to 100 tons per month.

Senator JONES of New Mexico. And in 12 months it would be twelve hundred tons. It would be about one-sixth of the total requirements of the country, would it not?

Mr. FRIEDMAN. I think it would be about one-fifth of the last year's production, would it not?

Mr. GEORGE OTIS SMITH. It would be one-fourth of last year's production.

Senator JONES of New Mexico. I was figuring on both imported and domestic products. It is something less than 10,000 tons altogether—between 9,000 and 10,000 tons altogether—consumed in the last year. Now, could you increase that output beyond the hundred tons a day?

Mr. FRIEDMAN. Yes, sir; I think we could. Of course, we would have to add onto the mill to do that.

Senator JONES of New Mexico. What sort of concentrating process have you used?

Mr. FRIEDMAN. We just crush it in a roll to about a 40 mesh and put it over the concentrating tables and that takes out the scheelite together with the iron that is in it, and then we run it through a magnetic separator, and that takes out the iron, and our product is complete.

Senator JONES of New Mexico. It is really a simple process, is it not?

Mr. FRIEDMAN. Yes, sir; very simple.

Senator JONES of New Mexico. It is very similar to the old concentrating plants for gold ore and free milling ore?

Mr. FRIEDMAN. It is just about the same, only we have to use the magnetic separator to take out the iron.

Senator JONES of New Mexico. Is the development of ore unlimited, or has it a limit?

Mr. FRIEDMAN. No, sir; it is not unlimited, although we have a lot of ore in sight; if we had not, we could not afford to build a plant at this time.

Senator JONES of New Mexico. About how much ore in sight do you estimate that you have?

Mr. FRIEDMAN. I think we have enough in sight now to run that mill perhaps two years. But the ore is not unlimited in any of them. It is going on both in depth and in both directions in the main.

Senator JONES of New Mexico. What is the width of your vein?

Mr. FRIEDMAN. It will average about 5 feet.

Senator JONES of New Mexico. Pretty nearly perpendicular?

Mr. FRIEDMAN. Yes, sir; it stands about 80 degrees and about like that [indicating].

Senator JONES of New Mexico. What per cent of concentrate do you get out of a ton of ore?

Mr. FRIEDMAN. Well, our ore will average about 2½ per cent tungsten—from two and a half to three or three and three-quarters as it comes out of the mine. Out of that we save about 85 per cent.

Senator JONES of New Mexico. And what you really want then is either to let this industry alone or see that the middleman does not absorb too much of the profits?

Mr. FRIEDMAN. I think you have it exactly. But there does not seem to be any stable market for it whatever, and when we offer a carload of concentrates for sale, the best we can get is "What will you take for it?"

Senator JONES of New Mexico. Do you know of any reason why that price should not be absolutely stabilized at the present time, inasmuch as the Government is taking the whole output of the steel mills and the price of the output is fixed; and can you see any reason why there should not be an absolutely stabilized price of this tungsten, which is required in the production of steel?

Mr. FRIEDMAN. Absolutely not. That is the complaint I have to make, that it is not. It should be; of course it should be.

Senator JONES of New Mexico. Could not the same concern which fixes the price of pig iron fix the price of tungsten?

Mr. FRIEDMAN. Certainly; it seems to me they could. If we had a fixed price on tungsten at any reasonable figure—and for our country—I can only speak of our case, the present price is sufficient and ample—if it should go much lower than that it would cut down the production, but at the present price the production would keep up and be increased if there was any permanency about it or anything definite, but a small producer who can not ship in carload lots can hardly get any price for his tungsten at all. They will not buy it for anything, simply because he is up against it. You can not ship it. It has all to come East and the local freight would simply use up all the profits. We ship in carload lots, and we do not care if we can not sell it. We will hold it until we get a price for it.

The CHAIRMAN. Then you think it is necessary to have some legislation which will tend to stabilize the price during the war?

Mr. FRIEDMAN. That is the main thing, to stabilize the price during the period of the war, and you will find that you will have plenty of production of tungsten. As far as licensing is concerned, of course, I do not know who would have that authority then, but I do know that I would not advise my associates to put three or four or five hundred thousand dollars into a plant where some man could come from the East and say, "You have to take so much a ton or you will have to quit."

Senator JONES of New Mexico. That is what the licensing system means, as I take it.

Mr. FRIEDMAN. If you do that you are going to ruin the industry, because tungsten plants and tungsten mines are very short-lived, and you have to make a big profit or you can not afford to put your money into it, for the reason that within a year or two the mine is liable to be gone and the price is liable to be gone. I have one mine now that cost $70,000 that could not be sold now for $10,000, because it is idle, and another one that was sold for $76,500 that cost, I think, about $120,000.

Senator SHAFROTH. Why?

Mr. FRIEDMAN. Because it is a long way from the railroad and by the time you dismantle it and haul it in it will cost you half as much more at the railroad than you pay for new stuff. It is not suitable exactly for what you want it for, anyway. I have a second-hand

mill standing idle, and I am buying all the material new, except that I am taking out of the old mill which will answer the purposes as well as new. So that mill is practically a total loss after it has run a year or two, unless you have use for it. That is the only advantage you have in having one close to the railroad, because there you might get ores that are shipped in to the railroad and treat them as custom ores, which you can not do if you are far from the railroad.

The CHAIRMAN. In legislation such as we are now considering there would have to be some governmental control in order to protect the producer, would there not? To-day there is none. The law of supply and demand controls, does it not?

Mr. FRIEDMAN. Yes, sir.

The CHAIRMAN. And you find that the demand is just as the middleman wants to make it?

Mr. FRIEDMAN. Yes, sir.

The CHAIRMAN. Now, in order to reach that condition and bring the producer in direct touch with the consumer, you will have to have some governmental control, will you not?

Mr. FRIEDMAN. Yes, sir; I should think so. I do not see how you could bring that about, though.

The CHAIRMAN. If the licensing feature does not meet the situation, have you anything in mind that would?

Mr. FRIEDMAN. Well, the only thing that I could think of that would do it would be the Government being charged with purchasing and distributing the product.

The CHAIRMAN. If the Government has that control you think it ought to step a little further so as to protect the industry after the war; in other words, should not the Government, if it does anything, put its hand out and control the output and encourage the output so as to meet the needs and requirements of the country at this time, but not overstimulate so that you will have such production that when the war is over you are going to have no market at all; it will all be on hand.

Mr. FRIEDMAN. I do not know how the Government could protect the industry after the war any more than not to fix the price so high that it would overstimulate the production very much, because no two mines can work under the same production; there are not two mines in which the cost of production is the same.

The CHAIRMAN. You understand, Mr. Friedman, that the committee is seeking for information and enlightenment, and we want to get the ideas of not only the consumer and the Government but also the producer, to see how he feels regarding this matter and what he thinks would be the best thing to do in order to stimulate the production of these metals. Now, if you have anything to suggest the committee would be glad to hear you.

Mr. FRIEDMAN. You see we have been up against that thing all the time in mining. Some mines could make money out of the price of metals and others could not before the war. That held good with regard to silver mines and gold mines, and I think that same condition will exist after the war and for the period of the war. I think if there was a minimum price fixed, or if you adjust a fixed minimum price during the war and let it go at that, I think it will take care of itself.

Senator JONES of New Mexico. I notice here something which is interesting to me. In 1912 the total domestic production and imports was just a little over 2,000 tons of 60 per cent ore. In 1913 it was a little less than 2,000 tons. In 1914 it was quite a bit less than 2,000 tons, only about 1,200 tons, and the domestic production running back during the years 1911, 1910, and 1909, when the imports are not reported, apparently—from the values given here, it could not have been very much, or perhaps about the same as for the years 1912, 1913, and 1914.

That would indicate that the peace-time requirements of tungsten were about, in round numbers, 2,000 tons a year. That has suddenly increased during the war to about 10,000 tons a year, and inasmuch as the uses of this ore are largely in connection with the manufacture of ordnance and munitions of war, the requirements after the war will be comparatively nominal—I mean would be nominal as compared with uses during the war; and so if we would enter upon any scheme here which would undertake to insure a price upon this ore after the war, would not the Government necessarily be loaded down with a very large quantity of tungsten ore after the war, for which it would have absolutely no use?

Mr. FRIEDMAN. Yes; I think that is right, although you will find. Senator, that tungsten will be much more extensively used from this on than it was before the war. It has not been very long since they really knew the value of tungsten in the steel industry in this country. It has not been many years ago when tungsten was used practically for making these electric lights, and now we find tungsten is of such value to the steel production; that it is going to be used in automobiles; and I think it is going to be used in steel rails, and you will find that there will be a great demand for tungsten. Of course, it will not be as great as during the war; that holds true of any metal, but I think tungsten will be used after the war in the same proportion that steel is going to be used.

Senator JONES of New Mexico. It could not be used at the present prices to any such extent, could it, unless you put up that price on steel rails?

Mr. FRIEDMAN. Oh, no, sir.

Senator JONES of New Mexico. You would have to find some method of producing tungsten much cheaper than it is—85 cents a pound—would you not, if you used it extensively in steel rails?

Mr. FRIEDMAN. Yes; there is no doubt about that, but you will find a great deal of tungsten will be used.

Senator JONES of New Mexico. I am quite sure you are correct about that; but, at any rate, it is apparent here that the use of tungsten has jumped from about 2,000 tons a year before the war to about 10,000 tons during the war, which would indicate a consumption for war necessities of about four times as much as the total production before the war; and would it be advisable for the Government to enter upon any kind of a scheme which would undertake to keep up after the war the price which the Government could afford to pay for tungsten during the war?

Mr. FRIEDMAN. Why, no; I do not think the Government could do it unless it had plenty of money to invest in the finished product that they have no use for.

The CHAIRMAN. But of that amount, Senator, you will notice there were 1,106 tons of tungsten exported in 1917, so it was not all used in this country.

Senator JONES of New Mexico. Yes; that is true, and that, of course, would indicate an overproduction in this country.

Mr. FRIEDMAN. I think our allies are begging for it all the time; they want it, and that is the only one that was sent. I think there was more sent to them than the country wanted to send, but they had to have it; is that not true?

Mr. GEORGE OTIS SMITH. Yes.

Mr. FRIEDMAN. And they are very anxious to get more now. There has been none exported elsewhere, because it is a product that our allies have to have.

Senator SHAFROTH. You say you think that one day tungsten will be used to harden steel in the rails of railways?

Mr. FRIEDMAN. I think so.

Senator SHAFROTH. About how much additional cost at the present price of tungsten would it add to the price of the rails?

Mr. FRIEDMAN. Well, I understand that they would figure on putting in about 5 per cent——

Senator SHAFROTH. Additional?

Mr. FRIEDMAN. Five per cent of tungsten in the steel for the rails.

Senator SHAFROTH. How much would it add to the price of the steel rail?

Mr. FRIEDMAN. Well, they would have to figure that out.

Senator SHAFROTH. Say, by the pound.

Mr. FRIEDMAN. Five per cent. Say that a pound would be worth $2. Five per cent of that would be——

Senator JONES of New Mexico. It would be 10 cents a pound.

Senator SHAFROTH. Ten cents a pound added to the steel rails would make that prohibitive, would it not?

Mr. FRIEDMAN. I do not know as to that.

Senator SHAFROTH. What are steel rails selling for now?

Mr. FRIEDMAN. I do not know what they are selling for.

Senator JONES of New Mexico. About $60 or $70 a ton, I think. Before the war it was maintained at $28 a ton for many years.

Senator SHAFROTH. Even at $60 a ton, that would make 3 cents a pound. Now, 3 cents a pound, you would add to that 20 per cent——

Senator JONES of New Mexico. Ten cents a pound.

Senator SHAFROTH. And that would make it a rather costly product.

Mr. FRIEDMAN. They claim that the steel would immediately wear out if it had 5 per cent tungsten in it.

Senator SHAFROTH. Do you know whether it costs very much more to get out molybdenum?

Mr. FRIEDMAN. I do not think it costs any more to get it out, if you have it; but molybdenum occurs in very small bunches and is very uncertain.

Senator SHAFROTH. It brings a higher price than tungsten?

Mr. FRIEDMAN. Yes; I think molybdenum is worth at this time practically twice as much as tungsten, although I understand they can not find any ready market for it either.

Senator SHAFROTH. The relative strength that it imparts to steel products is about double anyway, and it naturally would be about

double the price, because they would use some other in the event it was much higher.

Mr. FRIEDMAN. Molybdenum was sold at $2.80 a pound about three weeks ago. I was talking to a molybdenum producer about it. I think that tungsten will make the production of steel rails too expensive, but it will be used very extensively in automobile production, and especially in all tool steel, but I know they have been experimenting in steel rails with it.

The CHAIRMAN. What do they use now to harden those rails?

Mr. FRIEDMAN. I do not know.

Senator SHAFROTH. Nickel, do they not—just a small quantity of nickel, I think.

Mr. FRIEDMAN. I do not know about that.

Senator SHAFROTH. How about that, Dr. Manning? What do they use to harden steel rails with?

Dr. MANNING. Some manganese, Senator; but I think they get a high-carbon steel.

Senator SHAFROTH. Is there not a small quantity of nickel that goes into it as a hardening quality on the steel?

Mr. BASTIN. I believe they use nickel for alloy points in switch frogs and places that are subjected to extremely hard use. The Pennsylvania Railroad Co. used at one time a very small percentage of copper and nickel on curves; but as a general rule rail steel is a hard carbon steel and not an alloy steel, except, as I say, for switch points, crossovers, and frogs.

Senator SHAFROTH. Was there not a steel called Bessemer steel that was made from iron with very little expense?

Mr. BASTIN. Bessemer steel is the steel made from the Bessemer process. It was invented back in the sixties or seventies. They took melted pig iron and decarbonized it, and that permitted them to add just a quantity of carbon. They wished to make a steel having particular properties. Bessemer steel simply refers to steel which was made by the Bessemer process, as contrasted with the steel made by the open-hearth process, which was an older development. It is not an alloy steel.

Senator SUTHERLAND. The open-hearth process is the one now used, is it not?

Mr. BASTIN. Yes; it is generally used; but the Bessemer is used somewhat. It requires a particular grade of iron ore low in phosphates, the supplies of which, in this country, are not as large as the grades of iron ore containing the higher percentage of phosphates which may be treated in the Bessemer process.

Mr. MACBETH. Mr. Chairman, may I ask Mr. Friedman a question?

The CHAIRMAN. Certainly.

Mr. MACBETH. Mr. Friedman, you stated, I believe, that you are only aware of tungsten mills in operation in Colorado, Nevada, and California. I will state, for your information, that there are two tungsten mills in Idaho.

Mr. FRIEDMAN. You are mistaken, Mr. Macbeth. I stated that we only had one tungsten mill in our State and one in California. I did not refer to any other States. I know there are a number of them in Colorado, and I know of some in Idaho.

Mr. MACBETH. I will state that those Idaho mills are shut down owing to the very low price of tungsten. Tungsten could not be produced by those mills at a profit under the present market price.

Senator SHAFROTH. I will state that I have letters and telegrams from Colorado stating that there is no profit whatever at the present prices.

Mr. MACBETH. Mr. Friedman mentioned the possibilities of Humboldt County. I will state that there is tungsten all over the State of Idaho. I personally have knowledge of the presence of tungsten deposits in seven counties in the State, and I was recently advised by our State mine inspector that he examined a gold property—a property on which a 2,000-foot shaft was being driven to tap a gold dredge, and in the driving of it two loads of scheelite were found, and in his opinion, when the shipments were made, it would tend to break the tungsten market, because the quantity was so large.

The CHAIRMAN. Is that property developed to any extent?

Mr. MACBETH. I have knowledge of the property, but I do not care to mention it, because the property is quoted on the stock board. But those deposits were struck at depths of approximately 500 to 700 feet, giving, as we say in the mine, large backs. In other words, you would have to develop from 500 feet possibly to 700 feet depth on the veins. That is an old property. It is in the district in which Dana, in his minerology, mentions tungsten as having been found 30 years ago. There is tungsten throughout all that district.

Mr. FRIEDMAN. It seems to me that must be a terrible distance from the railroad.

Mr. MACBETH. It is about 30 miles from the railroads, and over one of the highest summits in the State of Idaho. But the production can be very cheap, Mr. Friedman, as you are aware. It can be made at a very low figure at the mine.

Mr. FRIEDMAN. As to the cost of production, I can only speak of our own country. I do not know anything about the cost of production in Colorado or Idaho. I can only speak for California and Nevada.

The CHAIRMAN. Mr. Macbeth, the word that you have got then would indicate that something should be done in order to stimulate the price of tungsten?

Mr. MACBETH. Not to stimulate production, but to stimulate the price. If you stimulate the price, you would have such a surplus production of tungsten that you would not know what to do with it. Mr. Friedman mentioned Humboldt County as being able to take care of the present situation. I am confident that Idaho could. Take, for instance, Pritchard Creek in Shoshone County. The formation is cut by numerous small ledges of tungsten. At the present time there is one mill on Golden Chest. There is another property which is producing tungsten, but I can not recall the name of it. The Guggenheims have removed from Alaska one of their large dredges and have placed it on Pritchard Creek and have been recovering gold. Now Pritchard Creek, according to information given by engineers who have made an examination, is filled with tungsten that has come down in ages past from these small ledges that are above the placers that were proposed to be worked by the

gold dredges. In operating this dredge the claim is made that there will be a large quantity of scheelite recovered.

The CHAIRMAN. How would you go about stimulating the production if you did not stabilize the price?

Mr. MACBETH. You would have to leave it entirely, in my opinion, to the law of supply and demand. Those who can not produce tungsten at a profit at the market price will have to go out of the business, and direct their attention to something else, just as in all other lines of trade. Those who can should be allowed to continue in the business.

Mr. WHITE. How long would it take to get the production?

Mr. MACBETH. The property that I mentioned, in which these ledges were discovered, would produce just as soon as they can get on the summit—that is, when the snow has melted on the summit, in order to permit the trucks to go into the country, which would be probably in 60 days from now.

The CHAIRMAN. Mr. Friedman, have you anything further to say?

Mr. FRIEDMAN. No, sir; not more than that there should be an arrangement made whereby the Government could stabilize the price by controlling purchasing and distribution of the product.

The CHAIRMAN. So as to afford a reasonable profit to the producer?

Mr. FRIEDMAN. Yes, sir; so that the producer knows where he can sell that product and get a certain price for it. I do not think the fixing of a high price or a low price would do very much good.

(Mr. Friedman was thereupon excused.)

## STATEMENT OF MR. GEORGE OTIS SMITH, DIRECTOR OF THE UNITED STATES GEOLOGICAL SURVEY.

The CHAIRMAN. Mr. Smith, you are Director of the United States Geological Survey?

Mr. SMITH. Yes, sir.

The CHAIRMAN. Have you made any investigation relative to the production of manganese within the last year in the United States?

Mr. SMITH. Of course, the Geological Survey has been keeping run of the current production of all of the minerals that are produced in the United States. That has been going on for a number of years. In the past few months, in the group of minerals that we have come to call the war minerals, the importance of keeping up to date in the matter of being in full touch with the industry, of course, has assumed unusual importance, and for this reason, instead of getting annual statistics of production, we have been getting quarterly and monthly and, in the case of coal, even weekly and daily statistics of production and railroad shipments. In manganese we are now getting the figures of monthly production, and not only that, but are trying to assist some of the other parts of the Government service by making estimates from time to time of the expected production.

Of course, you will see the importance of this in connection with the Shipping Board, for by the figures based on the information received by the Geological Survey and the study of some of the same problems by the Bureau of Mines, the Shipping Board has been furnished with estimates of what the country could be expected to

in the latter half of the year 1917, and, again, what is expected for the first half of 1918. In this way these bureaus of information are assisting the administrative boards—the war boards. This is bringing out the fact that last year was not only the largest year in the production of domestic manganese, but fortunately the rate of production at the present time is far in excess even of that for the latter part of 1917. We are looking forward in a general way to the first half of 1918 exceeding the production for the whole of 1917. I am speaking now of high-grade manganese ore, which is comparable with the Brazilian ore that has been imported.

The CHAIRMAN. Where has this high-grade manganese ore been produced in this country?

Mr. SMITH. The leading State is Montana. Then we have also Arkansas, Arizona, Virginia, Nevada, Georgia, and California as principal producers. Montana is far in the lead. The most promising change in domestic production is in your own State, Mr. Chairman, and I think that we have there a case that is thoroughly—I am afraid that it might not be altogether representative—but it is fairly encouraging in that a mine representing a discovery only last summer, and developments beginning late in the summer, and reaching the producing basis in the very last weeks of the year, has now become one of the more important producers in the whole country. That is in Clark County.

The CHAIRMAN. Nevada?

Mr. SMITH. Yes, sir.

The CHAIRMAN. And its production since the first of the year has equaled the production of what year in the past?

Mr. SMITH. The production of this one mine, that has only become a shipper in the last few months, has in the first quarter of 1918 had a production of high-grade manganese ore of 2,800 tons, considerably in excess of the whole country's production of the same grade of ore for the whole year 1914.

The CHAIRMAN. To what do you attribute this production, this increased production?

Mr. SMITH. Of course, the price has been such as to bring out a certain amount of production where the deposits are so situated as to favor development on a good basis, and in this particular case I think the ore deposit is believed to be rather more regular than is the case in so much of our eastern territory where the manganese deposits are pockety. The demand has been large, and it has been appreciated more and more by mining men that there was a national need. I think a certain amount of development can be attributed to the patriotic feeling of the mining industry, but I doubt if even patriotism can go to the point of stimulating production where there is a good chance of serious loss—serious financial loss. While some new mines have been opened, the largest production, outside of this one mine that I have mentioned as exceptional, has come from some of the old established mines, like those at Philipsburg, Mont., which is the largest producing district.

The CHAIRMAN. What was the price of manganese per ton in 1914?

Mr. SMITH. The price for the several years—the average price given for several years preceding the war—was $12.25. Apparently

it was much the same in 1914, although the range given in the table given to the committee was $11.76 to $12.74.

The CHAIRMAN. What is the present price?

Senator SUTHERLAND. Pardon me. Is that delivery price, or is that at the point of production?

Mr. SMITH. I think that is the price at Pittsburgh. That is the way we consider the price at the present time. That is expressed for a 49 per cent ore. At the present time the price is four times that price, but of course it is not accurate to state the price as a lump sum for the ton of ore. At the present time it is expressed, rather, at so much per unit of manganese content. That is to say, that, take the price at Pittsburgh of $1.20 per unit, if it were 48 per cent ore, you would have something like $57 a ton. To illustrate the difference in prices, I believe the local price for the high-grade Arkansas ore is $1 per unit.

Senator SUTHERLAND. What would be the average price?

Mr. SMITH. I could not give an answer to that question, but I know that the differential between Nevada, for instance, which represents a long-haul district, a district far away from the consuming centers, and Virginia, which represents a district close to the Pittsburgh market and consuming centers, is about $10.

Mr. WHITE. It would be about $10 from Montana to Chicago, and to eastern points about $4 or $5 additional. The western points, Montana, for instance, would range about $15 long-ton freight rate.

Senator SUTHERLAND. They could not ship at $12 to a point where the $12.35 basis prevailed?

Mr. WHITE. That would depend, of course, upon what the ore would come in competition with. Of course manganese is something they have to have.

Senator SUTHERLAND. That shows they were getting at much nearer points, with much lower freight rates, the price you were quoting as obtaining in 1914 and earlier?

Mr. SMITH. Of course, if you look at the table of imports you will find that the controlling element has been the foreign ores. When I spoke of 1914 producing only something over 2,000 tons, that was only about 1 per cent of the amount that was imported in the same year.

The CHAIRMAN. We were speaking of domestic production.

Mr. SMITH. Yes; I was speaking of domestic production—at which time the consumptive needs of the country were met only to the extent of about 1 per cent by domestic ore. At the present ime we are in a much better condition.

Senator JONES of New Mexico. Referring to the table which you were kind enough to furnish the committee, are you speaking now of ores which come under the classification of "A"?

Mr. SMITH. Yes, sir; the high-grade ore.

Senator JONES of New Mexico. Now, the importations of manganese ores are not separated?

Mr. SMITH. No, sir; those are essentially, as you understand, in normal conditions, high-grade ores.

Senator JONES of New Mexico. About what percentage of importations would come within that "A" classification?

Mr. SMITH. I think practically all.

Mr. WHITE. The importations practically all come within that grade—high-grade ore.

The CHAIRMAN. We imported in 1917 over 600,000 tons.

Mr. SMITH. Yes, sir.

Mr. WHITE. Chiefly from Brazil.

Senator JONES of New Mexico. I see that our domestic production of that grade of ore increased from a little over 2,000 tons in 1914 to something over 113,000 tons in 1917.

Mr. SMITH. And we expect even a greater increase for 1918. We hope to have a production in the first six months equal to the 12 months of 1917.

Senator JONES of New Mexico. In other words, during this year you hope to produce something like 225,000 tons?

Mr. SMITH. As to many of these subjects it does not seem wise to think ahead 12 months, and for that reason we take the next quarter or the next 6 months, and while I said that the 6 months' production would equal the 12 months' production, I hoped that the 12 months' production would be more than double that of the 12 months of last year.

Senator JONES of New Mexico. In other words, the production is increasing at a considerable ratio?

Mr. SMITH. Yes, sir.

The CHAIRMAN. Even so, we have to import to meet the needs and requirements of this country?

Mr. SMITH. Yes, sir; you are right there. Of course we are touching upon the fact that it is necessary to stimulate the production in such a mineral as manganese, even though the prospect of increase under present conditions seems quite encouraging. It is worth to the United States very much to get the last 10 per cent of ore that is needed. For that 10 per cent we can afford to pay more than we can for the 10 per cent that comes without stimulation.

The CHAIRMAN. It is like the last 100,000 men on the front, who might be the men who would win the war.

Mr. SMITH. Those are the men who may decide it.

The CHAIRMAN. And the last few tons of this metal might be what we needed more than anything else.

Mr. SMITH. The figure is quite apt. It is, I believe, the case of bringing up the reserves—our mineral reserves, just like the reserves in the army.

The question comes to mind whether under these conditions any additional increase in price would be to an advantage. I can not speak on that subject as well as a specialist, but I know the feeling of Mr. Hewett, who is the Survey specialist on this subject, that an increase is very desirable; it seems very desirable for the highest grade of ore. I would not expect the same increase for the lower grades, and it is a question whether any increase is warranted to bring out production.

Senator JONES of New Mexico. Doctor, you listened to the testimony, I believe, of Mr. Lamson the other day. He is discussing what I understand now to be a very much higher grade of manganese.

Mr. SMITH. For battery use.

Senator JONES of New Mexico. For battery use and that sort of thing.

Mr. SMITH. Yes.

Senator JONES of New Mexico. Is that the kind of manganese ore that comes under this classification "A"?

Mr. SMITH. That would come under this, but it would be the cream of that classification. It would be included in that tonnage.

The CHAIRMAN. And would bring the higher price?

Mr. SMITH. It would bring the higher price. When I spoke of the unit price, the richer it is, the higher the price, but even on the basis of the unit price of, say, $1.20 a unit, there seems to be good argument for increasing that price so as to bring out a larger amount of this highest grade, not simply for battery use but for metallurgical use as well.

Dr. MANNING. You understand, Senator, that this refers to 49 per cent manganese, and Mr. Lamson was referring to 70 or 80 per cent manganese.

The CHAIRMAN. And he got as high as 91 and 92 per cent manganese.

Senator JONES of New Mexico. Yes. What I was trying to get at was the quantity used of that very high grade. He only spoke, I think, of forty or fifty thousand tons, something like that—a comparatively small amount, but the general mass of the ore which is used only runs around, the way you have put it, ore on the basis of 49 per cent.

Mr. SMITH. That class "A" is 40 plus—everything over 40 per cent.

Mr. BASTIN. May I add that estimates received by the Shipping Board advisers as to the quantity of this very high-grade manganese ore used for batteries, plus the difference between 25,000 and 40,000 tons annually, they consider that 25,000 represents our needs during 1918 of that high-grade ore. That was the grade referred to by Mr. Lamson.

Senator JONES of New Mexico. Yes.

Mr. SMITH. Of course, Mr. Chairman, I have given attention simply to the broader aspects of this and I think if you wish to pursue the supject of manganese and its distribution throughout the country you could get much better information from the geologist who is devoting his time to that subject. At the present time we have geologists in the field, especially in the Southwest, looking into some of the newly reported occurrences, with a view of finding some place where a large production like that of Nevada might be expected.

The CHAIRMAN. Is this manganese ore being produced now in Nevada of a high grade?

Mr. SMITH. Yes, sir; I understand that is a very good grade, indeed.

The CHAIRMAN. It is now 12 o'clock, and the committee will adjourn until to-morrow morning. Mr. Day, did you desire to make any statement?

## STATEMENT OF MR. HARRY L. DAY, WALLACE, IDAHO.

The CHAIRMAN. Mr. Day, please state your name and residence.

Mr. DAY. My name is Harry L. Day; I reside at Wallace, Idaho.

I might say, Mr. Chairman, that it seems to me that this is largely if not wholly a commercial or business question rather than a scientific or statistical question, and with that idea in view I would sug-

gest that if it is thought proper the committee subpœna and request the testimony of a number of those gentlemen who are using those materials, such as manganese and sulphur and magnesite, in those large tonnages. I have reference particularly to those gentlemen who are very large users of those materials and who are familiar with the business methods of securing and distributing them.

I am in the mining business and not interested in the production, sale, or distribution of any metals or minerals referred to in this bill. I am an operator in lead, zinc, and silver mines, smelting works and refining works, and am familiar with that. I know much of the mining business from a long residence in the Pacific Northwest, and am familiar with general mining conditions in the Pacific Northwest where a great many of these so-called rare metals or minerals exist or are produced now.

Senator JONES of New Mexico. Have you any detailed information regarding any one of those other minerals here; are you in close enough touch with the production of any one of the other metals so that you can give us any information with respect to them?

Mr. DAY. I think I could, as to a number which are produced in the Pacific Northwest.

The CHAIRMAN. I may state to you, Senator Jones, that Mr. Day is going to be called before the committee before the close of the hearing, and he will then make a full statement upon the subject.

The committee will now adjourn until to-morrow morning at 10 o'clock.

(Accordingly, at 12.10 p. m., the committee adjourned until to-morrow, Friday, May 10, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

**FRIDAY, MAY 10, 1918.**

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met at 10 o'clock a. m., pursuant to adjournment, at room 450, Senate Office Building, Senator Jones of New Mexico presiding as acting chairman.

Present also Senator Shafroth, also Dr. Van. H. Manning, Director of the Bureau of Mines, and George Otis Smith, Esq., Director of the Geological Survey.

## ADDITIONAL STATEMENT OF MR. WALTER R. INGALLS.

The ACTING CHAIRMAN. Dr. Ingalls, before going into the matter which was indicated the other day would want to be taken up at this time, I would like to know if during the interim you have thought of any other matters in connection with the testimony previously given, which you would like to discuss further?

Mr. INGALLS. Yes, sir; since I testified on Tuesday I have read over my testimony, and it seemed to me that I should make more clear my ideas respecting the usefulness of a general minerals and metals advisory board, and if I may I will read a few sentences from an editorial by myself in the Engineering and Mining Journal of March 2 on that subject.

In discussing the general subject of coordination of governmental operations, I said that I conceived that one of the most important divisions should be a minerals and metals board. That board should be comprised of men experienced in the mineral and metal industries. The need for assistance in this way is not so much in the management of our industries as it is in coordinating the diverse interests and activities of branches of the Government. I have, myself, during the last year either been summoned to Washington or been requested to give advice by the War Industries Board, the War Minerals Committee, the War Trade Board, the Bureau of Mines, the Food Administration, the Federal Trade Commission, the Priority Commission, the Ordnance Department of the Army, Bureau of Supplies and Accounts of the Navy Department, and the War Credit Board—those that I remember—all of which have had interests in mineral and metal production and supply, and their interests have even been conflicting.

I go on to say in this editorial that—

There is need for a minerals and metals board as part of a real plan of organization and real general staff. Such a board should consist of experienced

men who think in terms of minerals and metals, who would examine every proposed move by every other major division of the staff and report the probable effect upon the minerals and metals industries—

One of our great industries, one of far more importance than some of those that are being talked about at present, was at that time in a critical condition.

Imperfect understanding of it, and perhaps sheer ignorance in correlated departments, stood in the way of ameliorating a threatened situation. A minerals and metals board, viewing things broadly and having the power that it would acquire under a general staff, would be attending to this. Under our existing system the situation receives practically no attention. We simply wait for something to crack.

I have had, as far back as a year, a conception of the need for such a board that would assist in coordinating management in Washington and would make plans ahead for crises that might happen in necessary minerals in which difficulties could be foreseen.

Mr. Chairman, with the permission of the committee, I will insert in the record at this point the memorandum respecting the status of certain minerals and metals, which I have prepared at your request.

The CHAIRMAN. That will be inserted in the record.

(The paper referred to is here printed in full, as follows:)

MEMORANDUM RESPECTING STATUS OF CERTAIN MINERALS AND METALS (FOR SENATE COMMITTEE ON MINES AND MINING).

(a) *Antimony.*—Our main supply comes from China. There are superfluous stocks of the metal in the United States at the present time, a recent estimate of the unsold accumulation being as high as 5,000 tons, this having resulted from an excessive importation in 1917. The recent market price has been about 12½ cents per pound, which the Chinese producers, who are the cheapest of the world, claim to be below their present cost of production. Anyway, they have not recently been selling in our market, which is awaiting an absorption of the unsold stocks. Within the last week or two the War Industries Board has been in the market for 1,000 tons, which inspired some private buying, and the price has advanced to 12¾ and 13 cents. The average prices of antimony in 1914–1917 were as follows:

| Year. | | Average (cents). |
|---|---|---|
| 1914 | | 8.763 |
| 1915 | (maximum, 39.25 cents) | 30.280 |
| 1916 | (maximum, 44.75 cents) | 25.370 |
| 1917 | (maximum, 34.04 cents) | 20.690 |

The high prices of 1915–1917 failed to stimulate domestic production to any material extent, and there is no good reason to suppose that such may be done now by a guaranteed price, except such as would be far above the present market level.

(b) *Arsenic.*—This is produced almost entirely as a by-product in copper and lead smelting. The United States uses about 10,000 tons per annum, 40 per cent of which is imported from Canada and Mexico, where it is also produced as a by-product. The Mexican and Canadian supplies enter this country because they are naturally competitive. The production of arsenic in this country can be greatly increased, but smelters have not heretofore been much interested in the recovery of this by-product, which is rather troublesome and has not been very profitable. However, at the request of the Government the Anaconda Copper Mining Co. has taken steps to increase its production. The price for white arsenic has been fixed at 9 cents per pound by the Food Administration.

(c) *Bismuth.*—The main source of supply is Bolivia, but this country produces more or less as a by-product of lead refining. The total requirement of the country is only a few hundred pounds. The supply can be greatly increased. The difficulty in the case of this metal has been to market it, not to produce it.

(d) *Bromine.*—This is produced entirely as a by-product in the manufacture of salt from natural brines. Wells are now being drilled at Government expense to increase the output.

(e) *Chromite.*—Heretofore this has been imported chiefly from Rhodesia and New Caledonia, but recent high prices have greatly stimulated the production in California and Oregon. The present price is about $1.50 per unit (22.4 pound for high-grade ore, which is approximately double the price of last summer, and about five times prewar prices. This mineral has been chiefly imported owing to the foreign supplies being cheaper than our own. A large part of the domestic use of chromite is as refractory material, for which magnesite, bountiful in supply, may be substituted. About 40,000 tons of chromite per annum have heretofore been used for refractory material, but it is asserted that without any doubt about 90 per cent of this can be replaced by magnesite. The annual importation of chromite has been approximately 75,000 tons, about one-fourth of which comes from Canada. Cuba and Brazil are expected to afford 25,000 tons of new supply in 1918, replacing the more remote supplies of Africa and New Caledonia. The American production of chromite increased from 3,300 tons, in 1915, to 47,000 tons in 1916. While commercial conditions in California have been rather unsatisfactory, the market shows signs of organizing itself and gradually becoming steadier. Recent reports have evinced a general easing of the situation in this mineral.

(f) *Cobalt.*—The use of this metal is relatively trifling. The United States does not comprise any known sources of it that are worth mentioning. What we need is obtained from Canada, which is doubtless able to furnish all requirements that can be foreseen. In fact, the Canadians have long been trying to make a broad market for this metal; in other words, to develop uses for it.

(g) *Corundum and emery.*—The domestic production in 1917 was about 16,000 tons, and the imports about 2,000 tons. The statistics show clearly that the United States has become practically self-supplying in these minerals during the last two years without there having been any phenomenal increase in prices.

(h) *Ferrosilicon.*—This is a manufactured product, which can be made to a practically unlimited extent if the market price be high enough to pay for the manufacture.

(i) *Fluorspar.*—The United States used to import this mineral from Great Britain, but domestic production has already been so developed that no longer do we import scarcely any.

(j) *Fuller's earth.*—As in the case of fluorspar, imports have already greatly decreased and domestic production increased. Prices have not increased greatly over prewar levels.

(k) *Graphite.*—This important mineral is still chiefly imported from Ceylon and Madagascar, but during the last year domestic production has been undergoing a great stimulation, especially in Alabama. Perhaps the most essential use of crystalline graphite is in the manufacture of crucibles for melting metals. The most important crucible manufacturer in the United States reports that it is impracticable to use Alabama graphite alone for this purpose, which it has ascertained after careful trials. Officials associated with the Government have expressed a different opinion, but it is not unreasonable to defer to the report of experienced manufacturers regarding this matter.

(l) *Grinding pebbles.*—These also were formerly chiefly a matter of foreign supply, but domestic production, largely in the form of natural beach pebbles from California, has been so stimulated that it is now largely in excess of the importation.

(m) *Iridium.*—This is a by-product obtained in the refining of crude platinum. The United States does not possess any supply of the latter worth mentioning, and there is no reasonable expectation of any discovery. (See Platinum.)

(n) *Magnesite.*—Our supply of this important mineral was formerly imported in the main, but in 1916 large deposits of the mineral, that had previously been mistaken for limestone, were discovered in Washington, and the United States now supplies nearly the whole of its requirements, and apparently the domestic production can be greatly increased if necessary.

(o) *Manganese ore.*—This essential ore has heretofore been imported mainly from Brazil, but high prices have greatly stimulated domestic production. Although the United States is not rich, so far as known, in deposits of high-grade ore, we possess some deposits of that character, besides which we have bountiful deposits of low-grade ore. Metallurgical improvements are already enabling low-grade ore to be utilized for the production of ferromanganese to a considerable extent, and further progress in this direction is reasonably to be expected, promising experimental work being already in progress. Two concerns

in this country have already entered upon the production of ferromanganese by the electric smelting of low-grade ore. Their expected production of ferromanganese will be about 60,000 tons per annum. The country's consumption of ferromanganese in 1917 was about 400,000 tons. The electrothermic supply will be an addition or replacement derived from ores not heretofore utilized. In the meanwhile manganese deposits in many parts of the country are being rapidly exploited. One of the most important of these deposits, and an entirely new one, appears to be that near Las Vegas in Clark County, Nev.

Fred A. Hale, jr., a Nevada mining engineer, writing in the Engineering and Mining Journal of April 27, 1918, reports that one property in this district is now shipping 150 tons of ore daily, with expectation of 300 tons daily in the near future. This ore is said to average about 41 per cent manganese and 11 per cent silica, and it is claimed that ore of this grade now fetches $25 per ton f. o. b. Las Vegas. Mr. Hale says, further, that "mining costs do not exceed $2 per ton and haulage at Las Vegas by motor truck costs $2.50 per ton; so that with proper allowances for moisture, etc., the margin of profit is approximately $15 per ton, which will be materially increased when better working conditions are obtained." Metallurgical manganese ore, which, previous to the war, was worth about 25 cents per unit in this country, is now in great demand at $1.20 per unit, and there is prospect that the price will rise higher unless restrictive measures be instituted by the Government. The American producers of ferromanganese have sought in the past to encourage the production of domestic ore and have published schedules of prices for it that were higher than the prices at which foreign ores were available.

(p) *Mercury.*—The United States is self-supplying as to this metal. The War Industries Board has arranged with the producers for supply to the Government at $105 per flask, the market price at the time of the arrangement and at present being about $120 per flask.

(q) *Molybdenum.*—High prices have already so stimulated the production of the ores of this metal that the market is supplied with more than could be sold at recent prices, and prices have been falling, with strong probability that the decline will continue. The development of new mines of this metal has created more of a problem of finding a market for it than there is of any other feature of the industry.

(r) *Monazite.*—This mineral is the source of cerium and thorium, which are mentioned in the bill. Importers of monazite contend that little reduction can be made in imports, except at the expense of highly necessary articles. The demand for gas mantles and other manufactures calling for thorium oxide has increased very materially. This is accounted for from the fact that gas plants are stripping illuminating gas, thereby detracting from its lighting efficiency. This has resulted in a greatly increased demand for gas mantles. There also has been an increase in the use of sparking alloys. The importation of monazite amounts to only a small quantity (about 3,000 tons in 1917).

(s) *Osmium.*—What has been said respecting iridium applies also to this rare metal. (See Platinum.)

(t) *Palladium.*—Obtained as a by-product in the electrolytic refining of copper. During the last year the demand has been very strong, and the price has now risen to $150 and $155 per ounce. There is no way of increasing the supply except to refine more copper.

(u) *Platinum.*—The domestic production is inconsequential, and there is no reasonable hope of increasing it materially. The United States must look to Russia and Colombia for this indispensable metal. The War Industries Board has practically taken charge of supplies existing in this country, and also of new arrivals, having fixed a price of $105 per ounce of platinum in crude form as that which it will pay.

(v) *Potassium.*—High prices ever since the beginning of the war have been a stimulus to the production of potash. The Government has done everything possible to aid in the exploration for deposits. It is inconceivable that any more strenuous efforts can be exerted than have been already. Our greatest hope is in a fortuitous discovery. There are chances, however, that potash may be extracted by chemical methods from certain rocks, experimental work of that nature having been already undertaken by private parties.

(w) *Pyrites and sulphur.*—An increased requirement for sulphuric acid and a necessary reduction in the importation of pyrites from Spain have created a deficiency in the supply of this important material, but the tension in the situation is probably overestimated, and natural factors are applying the true correctives.

In Louisiana and Texas we possess the greatest deposits of sulphur (brimstone) in the world, exploitation of which has heretofore been limited more by inability to market the product than anything else. Without any doubt, the supply can be increased immensely. The matter of sulphuric acid is perhaps the most complex of these problems. The United States possesses ample sources of sulphur, but the great resources are remote from the places where the sulphur is mainly needed, and both utilization and transportation difficulties stand in the way. Spanish pyrites come cheaply to places where there are acid works and local channels of acid consumption. The utilization of the enormous quantity of sulphurous gas that is dispersed daily into the atmosphere at Anaconda, Mont., for example, would necessitate a stupendous outlay for manufacturing plant, for tank cars, and for transportation.

The production of sulphuric acid in terms of monohydrate ($H_2SO_4$) in 1917 was about 4,300,000 tons, against about 3,900,000 in 1916. The Government estimates a requirement of 5,000,000 to 5,600,000 tons. We imported from Spain about 833,000 short tons of pyrites in 1917, which may be reckoned as making about 1,000,000 tons of sulphuric acid (monohydrate). If, therefore, we are to require as much acid as the Government's maximum estimate, stupendous though it be, and if we were not to import any pyrites from Spain, we should have to find raw material for about 2,300,000 tons of acid. Although that is a very large figure, the situation as to brimstone, which perhaps ought not to be divulged, is of such a nature as to dispel any alarm. Moreover, importations of pyrites will not be checked entirely; for the domestic production of pyrites is increasing, and smelters are adding to their production of acid as a by-product, wherefore it need not be assumed that new sources for 2,300,000 tons of acid must be found.

In 1915–16, sulphuric acid of 60° B., which in prewar times realized about $6 to $8 per ton, sold at $50 and $60 per ton. Before the end of 1916 the price had receded practically to the prewar normal. Referring to this subject, the Engineering and Mining Journal remarked, November 18, 1916, that—

"One of the war commodities that has come down to earth again is sulphuric acid. In the acute period this fetched $50 and $60 per ton. Ordinarily tower acid is now down to about $7 and $8 per ton, which is only a trifle in excess of what it used to be in normal times. The explanation is increased production. The consumption is still very large."

The price of $7 and $8 per ton at that time was undoubtedly subnormal, considering increased cost of production. At the beginning of 1917 the market was $12 and $13, and even that was regarded as low. It advanced during 1917 and was quoted at $22 and $25 at the close of the year. The recent price in the open market has been about $25, but the War Industries Board has arranged for Government requirements at $18.

(x) *Tin.*—The United States possesses no natural resources worth mentioning. Exhaustive search during half a century has failed to reveal any. No experienced man expects tin to be found in this country except by some chance discovery of a blind lode or something that has heretofore been overlooked. Tin distribution is already under Government control to all intents and purposes.

(y) *Tungsten.*—The supply of this metal is probably rather superfluous, production having been greatly stimulated in 1915–16, when the price rose as high as $100 per unit, but before the end of 1916 excess of supply had reduced the market to $16. At present the price is about $20. The supply both from domestic and foreign sources increased from about 1,300 tons in 1914 to about 10,000 tons in 1916. The behavior of this market has not indicated that there is any need for encouraging production beyond what natural factors will effect.

The ACTING CHAIRMAN. Will you indicate, Doctor, what powers you would confer on such a board as you have referred to?

Mr. INGALLS. I do not think that beyond certain powers that are asked for in the bill which is before you, there is much need for additional power; that is, beyond what is already possessed or which will be possessed under the Overman Act. I do not think there is so much need for additional power as there is for the several branches of the Government that are interested in minerals and metals getting together and talking things over with each other. In other words, what we need, I think, more than anything else, is better team work.

The ACTING CHAIRMAN. Well, what particular line of activity would you suggest that this board should embark upon?

Mr. INGALLS. The main activity of such a board should be in seeing that we are getting enough of the supplies that we need, and in getting them in the easiest way.

The ACTING CHAIRMAN. Doctor, is not that the function of the War Industries Board now as applied to various commodities, including minerals?

Mr. INGALLS. The War Industries Board is doing more in that direction than any other branch of the Government, but besides the War Industries Board other branches of the Government exhibit activities, as will appear by a reading of my detailed statement.

I do not see why, under the terms of the Overman bill, all functions of administration should not be concentrated in the War Industries Board. Since I testified last Tuesday I have been thinking how further legislation of this kind is going to affect powers that have already been granted to the President, or will be granted to him under the Overman bill. Barring that matter, and also barring the matters of licensing and price fixing, to which I am opposed, there are three essential things that it is desired to accomplish by the legislation that is now being considered. One is the giving to the Government the right to sell as well as to buy; the second is to make an appropriation for the purposes of the bill, and the third is, to give the Government the right to take possession of and operate mines that may be idle. I do not think that the last can be important, under general conditions, but there may possibly be a case of that kind here and there. I should not be averse to giving the Government the right to take possession and operate under such circumstances. I think it ought to have the right. However, I think that all of these things might be done more effectively by the creation of a United States Mining Corporation, or a war minerals corporation, on lines similar to those of the War Finance Corporation.

The ACTING CHAIRMAN. Now, Doctor, in order to give the Government the right to buy and sell any given metal, would that not virtually involve the taking over of that industry by the Government?

Mr. INGALLS. I do not think so.

The ACTING CHAIRMAN. Well, if they were to buy and sell, would it not be necessary to practically create governmental control of the entire commodity, to what might be called, for the lack of a better term, a Government monopoly?

Mr. INGALLS. I should say not. The Government is already buying many things.

The ACTING CHAIRMAN. Now, right there, if you will pardon me, so far as the Government requirements in its own activities are concerned, the right to buy would not involve such a broad undertaking as I have indicated, but the right to buy and sell implies providing material for individual use, it seems to me, and if you begin to supply material for individual use, would you not almost necessarily be required to supply all legitimate demands for the metal?

Mr. INGALLS. I do not think so.

The ACTING CHAIRMAN. Would you have the Government supply a favored few engaged in the same line of industry, and not others?

Mr. INGALLS. I am afraid you do not get my idea. The Government is already buying a great deal of many things—of many metals.

The ACTING CHAIRMAN. Suppose you take up some one metal and illustrate the point you have in mind, and let us follow that through and see how it would be handled.

Mr. INGALLS. Very well. The Government has lately made arrangements with the quicksilver producers to buy 40 per cent of their production, at a price of $105 per flask. The Government is not controlling the market. There remains a free market in the remaining 60 per cent of the production, and the market price at the present time is about $120 per flask.

Now, suppose that the Government found that it had contracted for more quicksilver than it needs, and would like to sell some of the surplus. At I understand conditions at present, the Government would have no authority to resell. One of the things that it is desired to acquire under this bill is authority to do just such a thing as that, and it could do such a thing without controlling the market any more than it has controlled the market in buying.

The ACTING CHAIRMAN. What was the occasion of the Government's buying this 40 per cent of the output?

Mr. INGALLS. I assume that the idea of the War Industries Board, which made this arrangement, was that that would be about what the Government requirements are going to be.

The ACTING CHAIRMAN. That is for the Government's own uses?

Mr. INGALLS. For the Government's own uses; but those uses can not be estimated ahead precisely. They may turn out to be either more or less.

The ACTING CHAIRMAN. For what purpose is that quicksilver used directly by the Government now?

Mr. INGALLS. It is used very largely in the manufacture of explosives.

The ACTING CHAIRMAN. At the Government's factories?

Mr. INGALLS. I presume both at the Government factories and at the factories of contractors.

The ACTING CHAIRMAN. Well, do you understand that the Government now is buying mercury or quicksilver in order to supply people who have made contracts with the Government for the furnishing of munitions?

Mr. INGALLS. While I have no direct information to that effect, I should imagine that would be the case.

The ACTING CHAIRMAN. Then the Government is now buying and selling quicksilver, is it not?

Mr. INGALLS. I do not know on what terms it is giving such supplies to contractors. The Government is doing the same thing on a very much larger scale with respect to its lead requirements. The Government buys very large quantities of lead, some of which it uses in its own arsenals and navy yards, and much of it it sends to contractors who are making munitions. Under just what terms it arranges the settlement with the contractor I am unable to say.

Mr. MACBETH. Mr. Chairman, I believe I can clear the situation up for you. The Government only pays for that which it requires for the Government factories. The producers of quicksilver and lead are directed to ship direct from the smelter or from the mine to the consumer. The Government has nothing to do with the paying of those bills. Those bills are settled by the consumer or manufacturer

The ACTING CHAIRMAN. Well, what particular line of activity would you suggest that this board should embark upon?

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direct with the producer. The Government only attends to that which it requires to use.

The ACTING CHAIRMAN. Is there any direct contract for 40 per cent of the entire output at the given price to be paid by the Government, Doctor? Do you understand that that is so, or is that just an arrangement whereby the Government may call for 40 per cent of the output at a given price?

Mr. INGALLS. I have not seen the terms of the arrangement or the agreement. I understand that the quicksilver producers of this country, and also the importers of quicksilver from foreign countries, have agreed to furnish to the Government 40 per cent of their production at a cetain price. Perhaps Mr. Macbeth is acquainted with the terms.

Mr. MACBETH. Mr. Chairman, I will say that Dr. Ingalls is correct; it is 40 per cent. I do not know what percentage of this 40 per cent the Government requires for its purposes. The Government, of course, attends to the payment for the amount that it uses, and the consumers, as I said a few moments ago, of quicksilver, those that use it for manufacturing purposes, such as explosives, fulminating caps, etc., pay for their purchases direct to the quicksilver producers, just as they do for lead.

For instance, I have a lead smelter—I am very well acquainted with one of the plants that furnishes 13 per cent of the lead. None of this lead goes to the Government munitions factories at all. The producers of this 33 per cent are instructed by the War Industries Board to make shipments direct to certain manufacturers of munitions, and those manufacturers of munitions pay the smelters. That is how that matter is arranged. The Government does not enter into it except to direct the War Industries Board, or the nonferro mineral department of that board, where those shipments shall be made.

Mr. INGALLS. It comes to the same thing. While the final settlement in the case of lead is made privately, in the way you have described, the Government has arranged the price.

Mr. MACBETH. Oh, yes.

Mr. INGALLS. And the point that I have been making in answer to Senator Jones's inquiry is that the Government can do those things without controlling the whole market.

Mr. MACBETH. That is true.

The ACTING CHAIRMAN. Then it is unnecessary that the Government should have given authority to engage in the business of buying and selling in order to accomplish what seems to be necessary to have accomplished? Is that a fact?

Mr. MACBETH. I should like to add that the situation in respect to copper and grade A spelter is similar in respect to that of quicksilver and lead. The producers of grade A spelter and the producers of copper ship direct to the consumer, and the Government has nothing to do with the paying of the bills.

The ACTING CHAIRMAN. Now, Dr. Ingalls, will you answer my question?

Mr. MACBETH. I beg your pardon, Mr. Chairman, I did not mean to interrupt you.

Mr. INGALLS. I can imagine that if the Government was obliged to go abroad to purchase tin ore, which we discussed last Tuesday, or to purchase platinum or other things that private individuals

might be unable to purchase or might be unwilling to purchase, under such circumstances the Government might need to have authority to resell. The desire to attain such authority is one that is expressed especially by officers of the Government, and I think that some of those who are present to-day are better acquainted with governmental methods than I am and could give you better information on this subject than I.

The ACTING CHAIRMAN. Doctor, I suppose it must be recognized by us all that if by legislation we should give to one branch of the Government general power to buy and sell any or all of the metals, we will say, mentioned in this bill would not that have a very material influence upon some of these industries whether the Government ever actually exercised that authority or not?

Mr. INGALLS. It would naturally have an influence commensurate with the magnitude of the Government's operations. They might be of such magnitude that they would be equivalent to a complete conducting of the business. On the other hand, the operations might simply cover a part of the market and leave the remainder clear, just as is the case now in quicksilver and in lead.

The ACTING CHAIRMAN. Let me ask you this: Would you limit this right to buy and sell to the quantity necessary to the Government's own use, or deemed necessary for the Government's own necessities and the uses of its contractors, or would you simply give the Government the right to sell any surplus that might be accumulated in the indefinite task of producing a sufficient quantity for its own uses?

Mr. INGALLS. Before answering that question I should like to hear from Dr. Manning or Dr. Smith, or some other governmental official present, just what they would like to do with the authority to resell.

Dr. MANNING. Mr. Chairman, if I may be permitted, I would like to speak on the mercury situation. The present demands of ourselves—the United States—exclusive of that of our allies, is about 35,000 flasks per annum; we are purchasing at the rate of about 35,000 flasks per annum. We have on hand about 2,500 flasks. I think that will illustrate the need of some agency to control that situation, but it is sailing close to the wind. It does not take into consideration what our allies may need. We are producing mercury for an army of a million men and if we increase that to 2,500,000 or 5,000,000 men, you must increase your production. The Government should not only control that particular mineral, as far as it is concerned, but it ought to be in a position to protect the industries, because 60 per cent of the mercury which goes now to the industries ought not to be affected by a shortage of this particular metal.

The ACTING CHAIRMAN. Would you go to the extent of having the Government purchase the entire output and in that way control the distribution?

Dr. MANNING. Not necessarily; the Government might control the entire output by some plenary power. Heretofore the output of the major metals, such as copper, lead, and zinc, and iron and steel, have been controlled through cooperative agreement with the industries.

The ACTING CHAIRMAN. What is the objection to handling the quicksilver situation in the same way that the lead and copper situation is being handled now?

Dr. MANNING. Because there is a sufficient production of the major metals in the country to-day. It does not need stimulation.

The ACTING CHAIRMAN. How would you go about increasing the production of quicksilver?

Dr. MANNING. If necessary, it could be provided for through governmental friends and other things—stabilizing prices, fixing prices, entering into contracts with a sufficient arrangement to guarantee the investment to develop those mines up to the maximum. One of the greatest difficulties we have had with the contractors is the question of the time limit. Take the particular case of the Anaconda Copper Co., which you know is a very large corporation—Mr. Ryan told me he was perfectly willing to invest a sufficient fund to develop probably 10 per cent of our manganese demands, but he could not get contractors to fix a time longer than 30, 60, or 90 days.

The ACTING CHAIRMAN. Now, Dr. Manning, I do not think it is the proper course for us here to take up one metal for the purpose of illustrating one point and then take up another metal for the purpose of illustrating another part of the same point or the same question. Now, let us confine ourselves to quicksilver, and just what is necessary to be done with that?

Dr. MANNING. I think it is necessary to increase the production in order to be on the safe side.

The ACTING CHAIRMAN. How would you do it?

Dr. MANNING. By furnishing sufficient funds to the small owners to develop their property, making contracts with them.

The ACTING CHAIRMAN. You would just simply contract with the individual who happens to have a mine or a good prospect?

Dr. MANNING. Yes, sir.

The ACTING CHAIRMAN. You would not then contract for all of the quicksilver in the country?

Dr. MANNING. Not necessarily. You could make those contracts through a cooperative agreement, as you have been doing with other metals.

The ACTING CHAIRMAN. Now, then, what are the requirements of quicksilver for the Government itself and its contractors in the manufacture of war materials?

Dr. MANNING. The Government has contracted, through the Navy Department, for 40 per cent of the governmental needs. They distribute that to any governmental agency that desires it. The other 60 per cent goes into the making of explosives for the Government by Government contractors, and the other goes into the industry.

The ACTING CHAIRMAN. Is all the quicksilver in the country now used by the Government direct or by its contractors?

Dr. MANNING. Forty per cent is used; the other 60 per cent by the contractors, and the Government contracts for industrial needs.

The ACTING CHAIRMAN. Is any of this quicksilver used for nonwar purposes?

Dr. MANNING. That I have not gone into—the nonessential purposes—I can not answer that.

Senator SHAFROTH. They have the right to use it, have they not?

Dr. MANNING. Yes, sir.

Senator SHAFROTH. If 40 per cent is preserved?

Dr. MANNING. Yes, sir. As to whether it should be necessary to limit the use of it for nonessential purposes, I will say that there is

no agency to-day that I know of that can say that you can not use it for that purpose.

Mr. INGALLS. Mr. Manning has not made clear the desire of the Government to have the right to resell. Perhaps I can make that clear by another illustration. Suppose the Government had the opportunity to arrange for all of the Russian production of platinum. It would probably be very glad to make such an arrangement, not only for our own requirements of that very essential metal, but also to prevent any of it from falling into the hands of the Germans. Now, suppose that having made such an arrangement the Government has acquired a larger supply than it needed for its own military and other governmental requirements. Suppose it had a surplus that could be offered to industrial users—manufacturers of magnetos and other things—as I understand it the Government at present would have no right to make such an offer or to make such an arrangement, and to acquire that right is one of the things that is desired under this bill. Is that correct?

Dr. MANNING. Yes.

The ACTING CHAIRMAN. Well, I can understand how that may be so with regard to platinum, but now come back to mercury. Here, the Government up to date has only attempted to control 40 per cent of the output. Why has it not attempted to get the other 60 per cent, if there is a shortage of it for war purposes?

Mr. INGALLS. I do not know.

Mr. MACBETH. Mr. Chairman, Mr. Pope Yeatman, who is head of the Nonferros Minerals Department of the War Industries Board, and who is handling the quicksilver situation, is, so I am advised, to appear before your committee to-morrow morning, and he will make clear this point that you now have in mind.

The ACTING CHAIRMAN. My point is this: If I am able to get the temper of the Members of the Senate it is about this: They are willing to give to the Government all authority which it actually needs and which is necessary to carry on the war, but the disposition is not to go further. They do not want to hamper the Government in any line in which it appears necessary for it to act or to limit its authority in any way which would make it embarrassing in the conduct of the war, but to interfere unnecessarily with an industry seems to be one of the precautionary things that is in the minds of a great many, and do you think that there should be any general authority given to buy and sell minerals, regardless of the Government requirements and to supply the market generally with minerals? Do you think that such legislation as that is warranted or necessary?

Mr. INGALLS. I am entirely in sympathy with the opinion that you have just expressed. Yet I can see contingencies that are likely to arise that would make it necessary for the Government to resell the substances that it has bought.

The ACTING CHAIRMAN. Well, I think there is no doubt on that point, doctor, but if the Government buys a supply of any metal or other commodity and finds out that it has no use for it Congress would be willing to vote the authority to dispose of that surplus. I am not certain but what the various departments of the Government have that authority now if they have a surplus of material on

hand, but if it has not I am quite sure such authority would be freely given. But would you go further?

Mr. INGALLS. No.

The ACTING CHAIRMAN. Now that, I believe, makes reasonably clear your position regarding the power to buy and sell. You have referred to the condition of the platinum industry, which might make it advisable for the Government to engage in the business generally of buying and selling platinum; that it might be necessary to establish agencies abroad for the purpose of selling here the supply of platinum, and what you have said about that impressed me very strongly. Is there any other metal that you think of that might become necessary?

Mr. INGALLS. That might also be the case with respect to tin ore and tin, which, if you remember, we went into quite fully last Tuesday.

The ACTING CHAIRMAN. Can not that be controlled through the mere control of imports? Is it necessary for the Government itself to go into the foreign markets and purchase the tin?

Mr. INGALLS. I do not think it will be necessary to go out into the foreign markets actually to buy, unless it were to prevent material from falling into the hands of the Germans. Otherwise, while the development of our tin-smelting business is being hampered somewhat by the condition that we discussed last Tuesday, it would not be necessary for the Government actually to buy. The same purpose might be accomplished by a guarantee to the private buyers against loss. Arrangements for a supply of that metal might be made in either of those ways.

The ACTING CHAIRMAN. As I remember the discussion of the tin industry the difficulty seems to have arisen from the question of furnishing boats for importation. The supply can be obtained, can it not, if there be transportation furnished?

Mr. INGALLS. We discussed the matter of boats, and I suggested that as one means of promoting this business in this country special facilities in the way of transportation should be afforded, but I was inclined to think that a more important way in which the Government could promote the business would be by protecting buyers here against loss.

The ACTING CHAIRMAN. Well, they are willing to buy it now as fast as they can get transportation, are they not?

Mr. INGALLS. Yes, sir; they buy it; but they do not buy it as freely as they ought to.

The ACTING CHAIRMAN. Well, if contracts were made by concerns requiring the product for a reasonable length of time ahead, would that solve the difficulty? For instance, if the Government should determine on the quantity of the tin product which it needed in its own business and for some length of time in advance, would not that solve the difficulty?

Mr. INGALLS. Yes, sir.

The ACTING CHAIRMAN. And have not the branches of the Government requiring the tin product for the uses of the Government authority to make contracts now?

Mr. INGALLS. I do not think that they have gone so far as to say that they will take steps for long periods ahead. In some cases they may have done so, and in some other cases they have not.

The ACTING CHAIRMAN. Well, if they have in some cases, they have the same authority to do it in other cases, have they not? What are the Government requirements for tin?

Dr. MANNING. Mr. Chairman, I can probably answer that. The Government requires very little directly for its own needs except through the canning industry. They are not contractors themselves.

The ACTING CHAIRMAN. And so far as tin is concerned, it is primarily a question of supplying the necessary consumers of the country in their tin uses.

Mr. MUDD (mineral technologist of the Bureau of Mines). Mr. Chairman, perhaps I can cite an illustration which will show some of the difficulties which the Government has in disposing of property. The Navy Department and War Department are at present buying sulphur for use in their own acid plants. In addition, they have seen fit to buy some sulphur which they propose to deliver to private plants under the terms of a contract by which the price of sulphur delivered is credited to the cost of the sulphuric acid delivered to the Army or the Navy; in other words, the Navy is furnishing raw material and in return is receiving the finished product, against which price the cost of the raw material is credited. It is part of the contract agreement. Not long ago we made an effort to induce the Navy to contract for pyrite, not with the idea that the Navy would use pyrite in its own plants, but that when the pyrite was actually produced the Navy would be in a position to exchange that pyrite for sulphur, and the sulphur released could be used in its own plants; the pyrite which was exchanged would be used by plants which had already made arrangements for a supply of sulphur. In other words, the Navy would be trading or exchanging instead of selling for cash.

We were not able to induce the Navy Department to do that, because, as they rightly pointed out, it was not clear that they would have an opportunity to exchange the pyrite for sulphur, and, if not, their appropriation would be depleted by the cost of the pyrite. Anything that they did receive from the sale—if they were permitted to sell it by some special regulation or by some resolution through Congress—would be returned to the general fund of the Treasury. In other words, their appropriation would be reduced by just that much.

As I understand it, the contracts for supplying sulphur, and also for supplying quicksilver, to contractors are based on the theory that the contractor will deliver the finished products to the Government for Government use. In the case of quicksilver, the Government has placed a price upon 40 per cent of the output, which is the estimated Government requirement. This price is somewhat below the present market, and the Government contractors who will use part of the mercury produced, or part of the 40 per cent—not all of it—will have the benefit of the price which has been arranged by the War Industries Board with producers. The portion set aside for the Government will be delivered to the Navy arsenals or navy yards, which will act for the Government, and, as occasion arises, will turn mercury over to other branches of the Government, or contractors, as they may require. The Navy is serving as a kind of business agent.

The advantages of being able to sell may be shown in this way: The Government, exercising superior foresight—knowing more about our military program—may look forward into 1919, and it may be very clear that there will be a shortage in some of these raw materials, and it would appear to be decidedly proper if the Government at this time should take steps to secure the needed production, although the Army or the Navy may not at this time have any contracts upon which the raw material may be applied. The Government is looking forward to contingencies which can not be foreseen by private consumers, and the Government, under the circumstances, should be willing to make contracts which private consumers or contractors would not be willing, or justified, to make.

The ACTING CHAIRMAN. Do not the branches of the Government try to anticipate its requirements in estimates for appropriations?

Mr. MUDD. I think they do; but it is not always the case that they have the actual contracts on hand on which the future production of raw materials may be applied.

The ACTING CHAIRMAN. Well, unless the War and Navy Departments should anticipate an additional requirement of commodity to such a definite extent as to want to make some contracts regarding it, would you have some other branch of the Government go ahead and accumulate a supply?

Mr. MUDD. I think it may be very proper because the estimates for the Army and Navy are constantly changing. They receive different advices of requirements from Gen. Pershing. Somebody must be in a position to look further ahead than the people in the Navy and Army Departments, which are actually making the contracts. As a rule the war contracts are not made as far in advance as it may be necessary to contract for raw materials.

The ACTING CHAIRMAN. Would you have some other branch of the Government anticipate the needs of the War and Navy Departments beyond those anticipated by those two departments?

Mr. MUDD. You will have to work on the basis of their requirements, or on the basis of their program, but at the time they may not wish to enter into contracts for raw materials, because they may not have actually contracted for the finished product into which that material will go.

The ACTING CHAIRMAN. If they would not be justified in making a contract, do you think any other branch of the Government would be?

Mr. MUDD. They would be justified in making the contract, but they have not reached that point; they have not been told to go that far in advance. They would be very glad if someone would undertake to do so.

The ACTING CHAIRMAN. Do you believe that any other branch of the Government should go to the extent of accumulating a surplus beyond that which the War and Navy Departments would desire to accumulate for themselves?

Mr. MUDD. Not beyond what they would desire to accumulate, but beyond the point at which their present contracts would justify them in accumulating. The actual contracts made by the Army and Navy do not, as I understand it, generally cover long periods of time.

The ACTING CHAIRMAN. Then the result, it seems to me, of your suggestion is that you would have some other agency of the Govern-

ment created for the purpose of anticipating the wants of the War and Navy Departments?

Mr. MUDD. But those requirements would be based upon suggestions of the War and Navy Departments' own estimates.

Mr. INGALLS. Mr. Chairman, let me inform you that the British in recent months would have been in a serious predicament if they had not accumulated a supply of copper in advance—I mean during the recent months when the shortage of shipping was so acute, when ships had suddenly to be diverted to the most essential uses. The British were able to cut out the transportation of many things, copper included, and for a while lived on their fat because they had accumulated the fat. Now, they are taking copper again.

The ACTING CHAIRMAN. I did not intend to suggest that there should not be some agency, or Government authority, to accumulate any quantity of supplies that might be anticipated, or the use of which might be anticipated, but should not that power be vested in the department that is going to use it? Could not such department know better what its future demands may be than any other branch of the Government could possibly know?

Mr. INGALLS. These materials are used by a good many departments, and the placing of the orders and the consolidation of the establishments has necessarily got to go through some one department if there is to be any uniformity of effort.

Senator JONES of New Mexico. Is not that one of the purposes now of the War Industries Board—I mean is that not one of the special things with which the War Industries Board has to deal?

Mr. INGALLS. In so far as the War Industries Board has converted itself into the equivalent of a ministry of munitions that is so.

The CHAIRMAN (Senator Henderson). Do they handle all these metals and ores that are mentioned in this bill?

Mr. MUDD. Mr. Chairman, I think it is fair to say that the Government departments up to this time have been concerned chiefly with their immediate requirements. They have not been able to see as far ahead as may be necessary to secure an adequate supply of raw materials; that has not been their province, it may justly be said. Some one else must take that responsibility with the knowledge that it requires time to develop mines and produce the raw material; they must look further into the future than it has been the practice of the Army or the Navy to do. The only way they can safely undertake to accumulate stocks and provide for contingencies for the increased Army and Navy program is to be in a position to sell the material that may not be needed.

Mr. WHITE (of the Bureau of Mines). Mr. Chairman, I would like to add one other factor to this discussion.

The question came up as to the requirements of sulphur as related to the pyrite situation. The real purpose of this bill is to go a little bit beyond the immediate Government requirements and to provide for the requirements for essential industries, which are wholly as important to our military operations as the direct munition use itself. The food and other supplies are just as essential to the Army as munitions, which are dealt with indirectly. As I understand it the War Industries Board is charged primarily with making Government contracts for materials directly required by the Gov-

ernment and have gone to the point of supplying raw materials in the making of some of those things contracted for.

The peculiar situation in pyrite and the sulphur situation in its relation to slphuric acid is this: Undoubtedly, we have at the present time enough sulphur to meet direct munition acid requirements. The chief problem facing the country is that if the military requirements suddenly expand—as they may and as there is a likelihood that they may—that enough of that sulphur will be taken for that purpose to deprive the fertilizer manufacturers of their requirements.

Now, that is getting beyond the direct power of the War or Navy Departments to foresee. If we have to close our fertilizer plants it will be a very serious factor in our food supply, and the great difficulty has been, and the question comes up, Why do not the fertilizer people provide for their own requirements? In the first place, they are very slow to perceive or understand the question of military requirements and the possible expansion. They do not realize the fact, or are just beginning to realize the fact, that they are not going to be allowed to have sulphur for their purpose because the military requirements need it.

And again, the industrial situation comes in in this way: The consumer does not want to make long-time contracts; he does not want to take the risk of the sudden ending of the war any more than a new producer of material who has to tie up money in mines which may be of no value after the war closes. The consumer hesitates to take the risk. The producer hesitates to take the risk. The military requirements are expanding, and at any time you cut off the supply of sulphur or pyrite from the fertilizer plants, the result is that you will need some more sulphur or pyrite, and apparently the situation has been at a deadlock.

It takes from three to nine months to develop a new mine, and unless mines are started in the near future we may face such a serious shortage as to cause curtailment for essential uses.

The purpose of this bill, as I interpret it, is the wide power of buying and selling, or of entering into contracts, the primary purpose being, by contracts on the guaranteed price, to stimulate the production of the material in which a shortage may occur, and the Government under this bill assuming part of the risk which is keeping private companies and individuals from anticipating supplying future demands.

There is no question but that we will have to pay, if the war goes on and we import materials, fully as high prices as we pay for any domestic material. The chief factor is as to whether the industrial concerns may anticipate the military requirements which are taking place. It was very hard to anticipate a few months ago that we were going to have to cut off almost entirely the imports of Spanish pyrite. The industrial trade did not anticipate that we were going to cut off 40 per cent of our Brazilian manganese ore, and we are in the position to-day of facing a shortage in those materials which are not directly consumed by the Army or Navy, and they are not directly responsible for providing those materials. They provide for their own needs, but it works back in this way in the manganese situation—they must have manganese for good steel. The Army and Navy may take care of getting steel and making it into munitions, but it begins to get a little further away from their direct province to

see that those indirect raw materials used by industrial concerns, several times removed, oftentimes from direct Government contracts, are provided with raw materials.

So I say it is not the province really of the Army and Navy to anticipate how much manganese ore will be required for all purposes, for railroad purposes—we have to keep our railroads going, and need manganese in rail steel. The Army and Navy may anticipate additional requirements, but not manganese requirements for steel rails. The War Industries Board, as its primary function, is looking out for Government contracts, not manganese steel rails, and the question is coming up as to the very serious condition in those industries several times removed from direct military requirements, and yet if you do not have your steel rails you would not have the food and would not move your munitions.

So the whole situation is tied up together. One factor is equally necessary with another factor, and in establishing a guaranteed price to stimulate production, if you have to do that on a contract, it does not have to be a guaranteed price; it can be an elastic contract, and at the same time there is given the choice of doing two things—use the guarantee price or the individual contract, which will take care of the individual mines, and if you are going to get stimulation, if the industries of the country can not and will not respond quickly enough—they would do it if they could see far enough ahead—but if they can not see far enough ahead, the Government will have to take some steps to guarantee production; and if you are going to do it effectively you will have to have the material, and if you have the material and assume the liability to handle it, then you have to have the power to buy and sell and redistribute to many of these essential uses which have not been able to get it, they not having foreseen that embargoes were going to take place, and not having foreseen the pressure that was coming for ships, when we are required to furnish a million and a half men this year. It is a situation that I do not see how many of the industrial concerns could foresee.

The risk in the element of the sudden closing of the war is large. It is a risk which the Government itself, on the assumption of this bill, should assume in order to keep going all the essential industries, and particularly those several times removed from our direct military requirements, that are almost equally essential in the carrying on of the war.

That, I think, adds a little bit to the factor of the necessity for additional general consideration, outside of the direct military uses, and the importance of the existing organizations which primarily have contracts for direct Government uses alone, without having to go out and provide for other uses. If you are going to take their product for some purposes, you have to supply something else. We have to keep our fertilizer business going and certain branches of our steel industries for equipment of these very munition factories. It goes back several degrees. So you have a very broad and complicated industrial problem, and that is why this bill does not rest upon Government requirements alone, but extends itself to the possibilities of food, and any emergencies which may come up.

It is a question largely of inability to anticipate requirements. Unless somebody has authority to meet this situation we are going to run into a very serious condition. This bill is giving very broad and

flexible powers to meet the guaranty of price, and many of those powers are only to take place in the event of the actual fact of a proclamation by the President under this bill. The emergency has got to be established. You simply give the President authority to meet it when the emergency comes, but it has to be by special action. So you simply provide a general flexible ability to meet a situation if it comes, not to anticipate that all those powers are going to be exercised for any one mineral. You may exercise one power for one mineral and another for another, depending upon the situation which comes up, and probably none of the powers will be exercised unless the emergency comes up.

The CHAIRMAN. Do you understand that the War Industries Board now makes contracts for the Army and Navy?

Mr. WHITE. As I understand, Mr. Chairman, the chief function and purpose of the creation of the War Industries Board was to arrange for contracts for Army requirements. The actual O. K'ing of contracts was in the hands of the Army and Navy always, but to advise the Army and Navy as to the making of contracts and as to fair and reasonable prices. The chief activity has been to secure reasonable prices for Government contracts.

Now, in the nature of things those prices had generally been below the market price. They have been with regard to materials of which we had a fairly abundant supply. Take copper, for instance. We were producing a large part of the supply of copper, far beyond our own needs. They made reasonable prices in the Government contracts for copper, and were able, through their influence, to extend it over a little broader scope, but direct powers are restricted entirely to prices with relation to Government contracts being either direct Government use, or to turn over the direct Government contracts. So the power to control general prices can only be exercised through voluntary agreements which they may get the trade to make, but they can not enforce them unless certain indirect powers are used.

Now, the whole assumption of this bill is that you are going to compel a man to do something by a priority board, telling him he can not have his equipment or can not have the cars or his transportation. If you are going to do that anyway, why not do it directly and openly?

The CHAIRMAN. The object of this bill is to provide direct authority for that condition.

Mr. WHITE. Direct authority over things that is now done indirectly. They are being done indirectly, and it would seem if you are going to have to do them indirectly if you have to curtail the use of tin or manganese or nonessential uses—if you are going to do it by a priority board indirectly, it would seem much more equitable to the trade to do the thing directly so that they may understand how it is going to be carried out, rather than to continue to do it indirectly. You will have to do it. If you are going to get results you will have to do it in some way. The chief argument of this bill is to do the thing, which has got to be done directly rather than indirectly, and it comes back, because this bill has a wider scope than direct Government contracts. It is dealing with a serious situation with respect to essential industries which are once or twice removed from direct Government purchase requirements.

The CHAIRMAN. Dr. Ingalls, you have prepared a memorandum respecting the status of certain minerals and metals for consideration to-day, have you not?

Mr. INGALLS. Yes, sir.

The CHAIRMAN. And this was done at the request of Senator Jones a few days ago?

Mr. INGALLS. Yes, sir.

The CHAIRMAN. Unfortunately, I was detained on some other business and could not be present when the committee met, and I do not, therefore, know what has transpired. Have you gone into this memorandum in detail?

Mr. INGALLS. No, sir; we have not taken that up. It has been inserted in the record, I understand.

The CHAIRMAN. I have just been glancing over the memorandum, and I think it is well that it should go into the record, and such explanation as you wish to make, following the introduction of the memorandum, you may take up and explain.

Mr. INGALLS. I think that will save time. I do not think of any explanations that I would offer, except with respect to two or three things, and among them is the matter of arsenic. That is a substance which is produced wholly as a by-product, to the extent of about 60 per cent in this country and 40 per cent from Canada and Mexico—chiefly the latter. The importations from Canada do not require any shipping; the importations from Mexico require a certain amount of coastwise shipping, but not necessarily, inasmuch as those importations come partly by rail and coastwise steamships and partly by all-rail routes.

The price of arsenic was lately fixed, or arranged—it comes to the same thing—by the Food Administration. This illustrates the way in which several bureaus of the Government are taking a hand in such matters. The price for arsenic previous to the end of February had been about 15 cents a pound. The Food Administration arranged a price of 9 cents a pound. That price has so far had no effect on production, for the reason that the marketing of this article is to a large extent a seasonal affair, and the contracts for 1918 were made, in the main, before the arrangement of the 9-cent price. There is a feeling among producers that the 9-cent price is likely to discourage production. On the face of things the price ought to be high enough. As compared with the direct cost of production it is undoubtedly high enough; but the main element in the production of that substance is plant, not the supply of raw material, and in order to stimulate production, the price ought to be high enough to induce people to put capital into plant.

Previously to the time when the 9-cent price was arranged at least two concerns had already taken steps to increase their plants, and there will be some increase in the production this year, because they will naturally go ahead with the completion of what they have already started. But there is a feeling in the trade that there would not be a proper incentive to consider further plant extension.

Mr. BASTIN. Is not a new smelter in process of erection at Great Falls, Mont., that will add about 2,000 tons to the domestic production and that that will be effective during the latter part of 1918?

Mr. INGALLS. That is one of the plants that I had in mind.

Mr. BASTIN. Well, that increment will take care of all our necessities, will it not?

Mr. INGALLS. I do not know. Besides the new plant at Great Falls, which, of course, you understand is in addition to the existing plant there; there is also a plant extension going on at Mapimi, in Mexico. At both of those plants extensions were instituted before the arrangement of the 9-cent price.

Mr. MUDD. Is it not true that the high price of arsenic, namely, 15 cents, resulted in a decreased consumption in its most essential use, namely, insecticides?

Mr. INGALLS. I have read that in the testimony that has been given in these hearings. Otherwise, I have no information on the subject.

Mr. MUDD. That would certainly be a disadvantageous thing if it is true, because it has a direct effect upon the food supply.

Mr. INGALLS. I should imagine that the increased production—not only what is already in sight but what would naturally result from the stimulation by high prices—would quickly bring about its own corrective. My information from the trade is that the 9-cent price has not yet had any effect upon the producers for the reason that their contracts were chiefly made before the price was made.

The CHAIRMAN. What price did those contracts carry?

Mr. INGALLS. Various prices.

The CHAIRMAN. More than 9 cents?

Mr. INGALLS. Yes, sir; various prices; but I understand that the market just previous to the arrangement of the 9-cent price was about 15 cents.

Mr. MUDD. Is it not true, Mr. Ingalls, that practically all the arsenic sold in this country was put on sale through one agency and that there was little opportunity for competition, which is generally understood to bring about reduced prices?

Mr. INGALLS. I do not know as to an agency handling all of that substance.

The only other matter, Mr. Chairman, in this memorandum that I think there is any need for me to explain is with regard to sulphuric acid. I have used some figures in that connection that will look to you as being different from some other figures that have been offered on the same subject. The reason for that is that sulphuric acid is offered in the market and is used in various grades ranging from strong acid, which contains 96 or 97 per cent of the pure monohydrate, down to chamber acid, which contains about 62 per cent of monohydrate, the remainder of the composition being water of dilution; and for the sake of statistical uniformity I have reduced all the figures to the basis of pure monohydrate. So while my figures may look some different from some others, they are really the same. I have no other explanations to offer.

The CHAIRMAN. When you were testifying the other day, you said that in your opinion it would be well to have an advisory board to handle these metals and give advice on them and information regarding them.

Mr. INGALLS. We went into that subject this morning, Mr. Chairman, before you came.

The CHAIRMAN. Then, I will not take it up at this time.

Mr. INGALLS. I think that besides what I said about it the remarks of Mr. Manning and Mr. Mudd and Mr. White have all been illuminating.

The CHAIRMAN. Is that all you have, Doctor, in regard to this matter, or is there something else that you would like to take up?

Mr. MUDD. Mr. Chairman, may I interrupt for one minute?

The CHAIRMAN. Certainly.

Mr. MUDD. Mr. Ingalls, what recourse would the metals board have if the trade refused its cooperation and would not follow the suggestions or requests of such board under existing conditions?

Mr. INGALLS. Have there been cases of that kind?

Mr. MUDD. There are cases before the War Industries Board now.

Mr. INGALLS. Are you at liberty to mention any of them?

Mr. MUDD. Not as fully as I would like to, no. I may say, however, that the War Industries Board is not making the progress that it hoped it would make upon the subject of graphite and chrome, and perhaps some others.

Mr. INGALLS. Can you go a little further and indicate in what ways?

Mr. MUDD. The failure to get real cooperation from the trade.

Mr. INGALLS. In the trades and industries with which I come mostly into contact I have observed a uniformity in the desire to cooperate with the Government in every way. The copper business and the lead business could not have been conducted so smoothly as they have been, if the details of both of those businesses had not been left to the people who are conducting them, which people have acted in the most broad-spirited, farsighted, and patriotic way. In the cases of certain metals and other substances there are monopolies or near monopolies. That is the case with aluminum. It is also the case with nickel. I think it has been the easiest of all for the Government to make generous arrangements with those people.

In the cases of those minerals which Mr. Mudd has just mentioned, there are not monopolies. The minerals are the subject of production by a good many people. The markets are fairly competitive, and I should like to know if it were possible for me to learn, more as to the nature of the troubles that have been experienced with regard to them. I am aware that officers of the Government have told certain manufacturers of graphite crucibles that they ought to use more Alabama graphite, and that the manufacturers of those crucibles have replied that they had tried to do so but that they had been unable to do so successfully.

Mr. MUDD. We have good evidence, which is uncontrovertible, that good crucibles can be made using a certain percentage of domestic graphite—not solely domestic, but a fair per cent of it—and it is a practice which is being followed to-day by certain manufacturers.

Mr. WHITE. The statement by one of the largest crucible-steel manufacturers has been that they could use satisfactorily 100 per cent domestic graphite if they could get it.

Mr. MUDD. Do you not think, Mr. Ingalls, that the reason the War Industries Board has been successful is the fact that they have been working with well-organized industries which are represented by large units rather than a multitude of small producers? Do you

think they would be as successful in their efforts when they undertake to control some of the prices, which they have not yet attempted to do?

Mr. INGALLS. I think your idea is correct to a considerable extent. The major industries are conducted on a very much bigger scale and by bigger people than are the minor industries, and the bigger the people the more broadminded and farsighted they are likely to be. Undoubtedly the smoothness of affairs in copper and lead has been largely attributable to those conditions. But when as to the use of some of the minor minerals it becomes a question between Government officials and experienced manufacturers I am inclined to put the more weight upon the opinion of the manufacturers.

Mr. MUDD. Suppose, on the other hand, that there is a disagreement between the manufacturers, that they are not of one mind.

Mr. INGALLS. I suppose you saw a recent letter from the Joseph Dixon Crucible Co.

Mr. MUDD. I have seen several. I do not know just which one you refer to.

Mr. INGALLS. I have a copy of that letter, if you would like to hear it.

Mr. MUDD. Regardless of what the difficulties are as to graphite or chrome or some other commodity, in case it is deemed for the best interests of our industries and the Government what pressure could be brought to bear, or what could be done by an advisory body such as the metals board, to bring those people into line? Suppose it was a very clear case that something had to be done and should be done?

Mr. INGALLS. I think that publicity might have a good deal of influence.

Mr. MUDD. Whom would we depend upon for publicity in a trade situation?

Mr. INGALLS. The press, naturally. I am assuming from your statement of the conditions that you have a perfectly clear-cut case.

Mr. MUDD. And that condition is not at all improbable; in fact, it has arisen.

Mr. INGALLS. The condition with which I am acquainted, namely, the controversy respecting graphite for crucible manufacture, does not seem to me to be a clear-cut case. I believe there is also a controversy respecting the use of certain clays, is there not?

Mr. MUDD. That controversy has been pretty well cleaned up.

Mr. INGALLS. Where such controversies arise between Government bureaus and manufacturers who are experienced in the business, as I have previously said, I am inclined to put the more weight upon the opinions of the manufacturers. It would be easy enough for the Government, acting on a theory, to cause an industry to cease. For example, there is scarcely any substance which exists more plentifully than clay, yet in zinc smelting the experience of the industry has been that only one kind of clay is particularly suitable. Now, suppose a case might arise where the Government did not want to permit the smelters to use that kind of clay, prohibition of its use might stop the zinc-smelting industry. With regard to the manufacture of graphite crucibles, which is an analogous matter, the Joseph Dixon Crucible Co., which is the oldest and largest concern

in that business, says that they have been trying to use Alabama graphite; that they have put their own money at the service of the Alabama operators for the purpose of promoting their supply; but that they have been able to use it only in limited quantities.

Director GEORGE OTIS SMITH. What percentage, may I ask, Doctor?

Mr. INGALLS. They say not more than 15 to 25 per cent.

Mr. SMITH. And if I have the evidence from four other crucible makers that they can use from 20 to 35 per cent—while the natural inference would be that the Dixon Co. is not only the oldest but possibly the most conservative of the crucible makers—that would be a natural inference, and I may add that four other companies did say that they can use from 20 to 35 per cent and without bad effect, and in one case with improvement, those companies being the Crucible Steel Co., the Bridgeport Crucible, the Atlantic Terra Cotta, and the Gautier Co.

Mr. BASTIN. I may say too that the people interested in the graphite industry on behalf of the Government have never suggested more than 25 or 30 per cent of American graphite be mixed with imported material, that being adequate to keep the American industry in a thriving condition.

Mr. MUDD. Would a metals board be as successful in accomplishing the results which we agree should be accomplished, if it was simply an advisory board or a consulting board, or if it were a board authorized to correct abuses and to force manufacturers to pursue a more or less uniform program so that the restrictions, if there are any, such as importation restrictions, would be on all rather than those few who are willing to accept the conditions which are brought about by the emergency?

Mr. INGALLS. I should think it would be very dangerous for a board of that kind, in its direct relations to industries, to go beyond advisory functions. I think that if a board were created with the authority to tell the manufacturer of graphite crucibles, for example, that he must revise his methods and henceforth make crucibles in a certain way, it would probably have the result that we would get fewer crucibles than we did before, and maybe would not get any. I understand that that was exactly the experience in Great Britain in shipbuilding; that when the British Government, through its offices in London, undertook to tell the shipbuilders just how they must build ships, they failed to get the ships that they wanted, and they did not get them until they turned the business over to experienced shipbuilders, with simply the instructions to produce ships. I think that it would be a most hazardous thing to tell an experienced industry how it must conduct that industry in a technical way.

Mr. SMITH. Mr. Chairman, may I take up the question of graphite for crucible use?

The CHAIRMAN. Certainly.

Mr. SMITH. Some 13 years ago, at the Dixon works, they told me it was impossible to make crucibles with less than 100 per cent of the Ceylon graphite. Suppose that investigative or advisory board, or even a board with power, had told them that it was for the country's greatest good that they should use 15 per cent or 20 per cent, or even taking it down to date, should tell them that they should use 35 per cent, would that be going in the face of practice; would it not rather

be simply asking an industry to use not the poorest practice, but the best practice worked out by that industry? And when I ask that question, I think of it as applying also in metallurgical practice, for instance, in the use of manganese in steel?

Mr. INGALLS. We all know many cases where industries have said that certain things can not be done, after which, upon experimentation and demonstration, it has been found that it could be done. We, all of us, have had similar experiences in our own affairs. But to dictate about such things at this juncture, where the greatest requirement of all is speed, it seems to me would be a very dangerous thing to do, and after the experiences that there have been in shipbuilding and in other things it would seem to me something like flying in the face of Providence to dictate to an industry. Advise and cooperate, but do not dictate.

Mr. SMITH. Of course, I agree with you against any policy of dictating, on the basis of something that had not yet been done. But take the suggestion of dictating, if you wish to use that word—the best practice, the best existing practice—not the best possible or probable practice, but dictating the best existing practice to the whole industry—is that not working for the industry's good and for the good of the United States at one and the same time?

Mr. INGALLS. I think that such matters have got to be talked over in the industries and decided upon in them, and I think that in general the people who are engaged in those industries have no desire for anything except to cooperate and work for the general good. But I can not think favorably of Congress or a committee or a Government scientific bureau telling an industry that it must suddenly introduce revolutionary changes in its technical methods. That is just the kind of scope that I hope that this metals and minerals administration, if created, will not have. It is what I had in mind in speaking of the functions of a policeman, which I hope to see avoided.

Mr. SMITH. Doctor, speaking of the technical questions relating to an industry itself, is it not possible that there is need for larger entrance of the technical ability of the industry itself in the management of that industry? To add to the question, is it not sometimes true, and too often true, that accounting officers or purchasing officers of a corporation have more influence in deciding those technical questions than the technical officers or employees of the same corporation?

Mr. INGALLS. I should not care to generalize in that way.

Mr. SMITH. You have known cases of that kind, have you not?

Mr. INGALLS. I have known of cases of that kind. I have known also of cases where progress has been retarded by the conservative ignorance of workmen. I should not like to make generalizations of that sort. I think that in all industries a great deal can be accomplished by conference and advice. I think that a board such as we are contemplating would be a most useful institution in those ways. but do not let it be dictatorial.

Mr. SMITH. Without being dictatorial, is it not true that the more strength there is in the right arm of such a board the more prompt will be the movement on the part of the industry by conference and cooperation, and the more hearty will be cooperation when we know that such a board, such a governmental agency, has something besides ability to give free and sympathetic advice?

Mr. INGALLS. I do not think so.

Mr. SMITH. May I ask you a question covered by one sentence in your statement under manganese. After referring to the fact that the manganese ore had increased in price from 25 cents per unit to $1.20, with a large demand for the present time, you say:

> The American producers of ferromanganese have sought in the past to encourage the production of domestic ore and have published schedules of prices for it that were higher than the prices at which foreign ores were available.

Mr. INGALLS. Yes, sir.

Mr. SMITH. Can you cite instances beyond the general statement, in what ways have the importers and consumers of manganese ore tried to stimulate the domestic production?

Mr. INGALLS. The American makers of ferromanganese have regularly for many years published schedules of prices at which they would take domestic ores, and the publication of such schedules has implied that they would take them when they came within the specifications. Those schedules have been higher than the terms on which manganese could be obtained in large quantities by contract from foreign countries—the Caucasus, India, and Brazil. Previous to the war American manufacturers of ferromanganese did not have to look to this country at all. Mere publication of schedules was encouragement to the domestic producers.

Mr. SMITH. The information I have had has been along the line—and this is direct information—directly opposite to that, that domestic producers were discouraged and they were not helped in the way that they might have been helped, not only last year, but even up to the very present. More than that, I was informed only the other day that the price for domestic ore in Pittsburgh was $1.15 per unit and for imported ore $1.20—the price that you gave in your summary.

Mr. INGALLS. The domestic makers of ferromanganese could not, of course, encourage domestic production to the extent of paying a price far in excess, or even very much in excess, of the terms on which they could get foreign supplies. With regard to the difference of the quotations for domestic and foreign ore at Pittsburgh recently, which you have mentioned, I should say that it might easily be so, because the value of manganese ore is determined not only by its chemical composition, but also by its physical quality—its physical properties—and it might be that a domestic ore would only be taken at a discount owing to inferiority on that account. There was a report, by the way, in the market this week, that the Government is contemplating fixing a maximum price for manganese ore. It was a general expectation that the makers of ferromanganese were going to raise their schedule this month, but the information that circulated in the early part of this week was that they would not do so, for the reason that the Government, or some bureau of the Government, is contemplating fixing a maximum price. I got that only as a rumor; I do not know what truth there is in it.

Mr. SMITH. Do you think that the price of manganese ore is too high now?

Mr. INGALLS. No, sir; I do not. It would seem to me that the fixing of a maximum price on manganese ore would be suicidal.

Dr. MANNING. I would like to ask if you are in favor of the Government buying these ores cheaper than the industries and the private

individuals; in other words, take the price of mercury, $105, the price to the Government, and $1.20 to the private industries.

Mr. INGALLS. Yes.

Dr. MANNING. You are in favor of that differentiation?

Mr. INGALLS. Yes, sir.

Dr. MANNING. Upon what ground?

Mr. INGALLS. It restricts the open market, causes the price for the free supply to rise higher than it would otherwise, and therefore operates automatically to cut out nonessential uses.

Dr. MANNING. The question I wanted to bring out was why should not the Government pay the price the other people pay?

Mr. INGALLS. I do not know whether it is generally appreciated that the action of the Government in fixing prices has apparently not been governed by any definite policy; it has been simply that of opportunities, the same department doing different things, and a variety of departments taking a hand.

In the case of copper and some other substances, a maximum price was arranged by agreement which was to apply not only to the purchase of this Government but also to the purchase of foreign governments and also those of the general public. In purchases of lead, the Government first adopted the method of buying at a flat price by contract, and then reverted to the method of buying at the average market. In the case of common spelter, it is buying on a competitive basis in the old-fashioned way. In the case of quicksilver and some other things, the method—and this is the most recent of all the methods—has been to arrange with the producers for a special price for the Government's requirements alone, leaving the rest of the market to itself. In that way, the Government gets a good bargain for itself, and naturally, as I have already pointed out, causes the free market to be higher.

Mr. BASTIN. May I ask a question?

The CHAIRMAN. Certainly.

Mr. BASTIN. I judge, Mr. Ingalls, from your statement in regard to antimony that you have presented, that you do not think Government assistance is necessary in the antimony industry.

Mr. INGALLS. I do not think it is.

Mr. BASTIN. The antimony supplies of this country, or the bulk of them, come from China, do they not, in Japanese ships?

Mr. INGALLS. Yes.

Mr. BASTIN. Suppose that through the exigencies of the war the need of the Japanese for their own ships, or the needs of those ships in the trans-Atlantic traffic, those ships were suddenly cut off, what would you suggest to meet the situation that would then arise? Could it be met without Governmental aid? That would be a situation that would arise suddenly, if it arose at all, probably.

Mr. INGALLS. A similar situation might arise with respect to tin, might it not?

Mr. BASTIN. I think so.

Mr. MUDD. Not entirely similar, because we have antimony resources, although we have no tin resources.

Mr. INGALLS. In those circumstances we would have to go to our domestic resources, costly as they may be.

Mr. BASTIN. Mr. Chairman, it seems to me that this antimony matter brings up one point that ought to be emphasized in connec-

tion with the bill, and that is that the bill as originally presented to the House committee did not contain all the mineral substances specified in the present bill. It contains about one-half of those. During the time that the bill was under consideration in the House, it has become clearly apparent that it was necessary to add a few more substances to the bill. It was virtually at the suggestion of the House committee that still other substances were added, and the purpose of adding those other substances was not with any contemplation that this same legislation or same regulation need be applied in the case of each of those substances, but to make it unnecessary for the organization charged with the administration of the act, if the act passed, to come back to Congress at intervals to secure the addition of various substances.

Now, some of those substances may require regulation by price fixing. In others the main problem is the problem of allocation of imported supplies or of domestic supplies. In others it is well understood by those conversant with those substances that there was no serious immediate pressing need for including them in the bill, but that that need might arise and very possibly would arise, and that therefore it was wise foresight to include them in the bill. Antimony is an example of one of those materials.

Mr. MUDD. May I ask another question? I think, Mr. Ingalls, you believe that the law of supply and demand will operate to eventually solve this problem, yet on the other hand the Government by its large producing power is operating in a way which tends to suspend the law of supply and demand. For example, it takes a large part of the production of mercury off of the market. The result is an increase in price to the domestic consumer. The Government has, in effect, thus created a corner of part of the supply which operates to the disadvantage of other buyers. Is that a fair illustration of the way in which the law of supply and demand should be allowed to operate?

Mr. INGALLS. I think it is a proper way, Mr. Chairman, and I do not agree with the statements that are frequently made to the effect that the law of supply and demand is suspended: it is not suspended. You can not suspend the operation of a natural law. What happens under the conditions of concentrated buying, that Mr. Mudd has just mentioned, may be the creation of a buying monopoly which is just the opposite in its economic action to the conditions that arise when there is a selling monopoly. Many substances that the world uses are produced by monopolies, but the law of supply and demand governs them.

Now, as to letting the price in the outside market become extraordinarily high by the limitation of the free market, that is the surest and swiftest way, and also the least harmful way of cutting out nonessential uses. We had just such an experience in the lead market last year. The lead market is always a limited market for the reason that so large a part of the lead production goes to consumption on average price contracts. In the early months of the war the Government intimated that it was going to require a great deal more lead than, in fact, it really needed; but those intimations coming into a restricted market caused users of lead who had already entered into contracts for the delivery of the finished articles and were uncovered as to their supply of raw materials to become frightened, and they rushed into

the market to get what they could, with the result that the price was bid up to nearly 12 cents a pound. The Government was absolutely responsible for that, and it was responsible because of its erroneous estimate. However, the effect of this extravagantly high price was immediately to curtail consumption, and that was done in a most dramatic way, almost overnight. The lead market changed suddenly from a situation of stringency to a situation of superfluity, with a decline in prices that did not stop until the market got down to 5½ cents. The high prices that were prevailing in June and July of last year had the immediate effect of cutting out the nonessential uses of lead. There was previously a large consumption of lead for bird shot, for which purpose there is normally a large consumption. That use of lead was practically extinguished.

Mr. MUDD. Do you think it is fair that the Government should discriminate against outside buyers and in that way throw the entire burden of stimulating production upon them instead of sharing it equally with the industries?

Mr. INGALLS. To answer your question briefly, I would say yes, rather than to fix maximum prices that are restrictive.

Mr. MUDD. The industry should pay for the advantage which the Government receives on account of its great purchasing power?

Mr. INGALLS. The difference in conditions is on the one hand an automatic adjustment of consumption, and on the other hand putting the entire industry on a ration basis.

Mr. MUDD. Is it not beter to look forward to stimulating production first, and curtailment of production secondly?

Mr. INGALLS. Production should be stimulated and consumption should be curtailed, but you are not going to stimulate production by fixing maximum prices, if that is what you mean?

Mr. MUDD. I do not mean to suggest a maximum price at all. I was trying to draw out the fact that a private industry would be called upon to bear the burden which the Government will not share with them, if prices are allowed to go above the point at which the Government was permitted to purchase. The private industry generally conforms to the 23½-cent price to-day.

Mr. INGALLS. Yes, they do, but they do not get their copper.

Mr. WHITE. I understood that the theory would be that increased prices would curtail nonessential consumption. Now, that possibly would not always work in the case of platinum. Increased prices tend to curtail nonessential uses by one of the chief users of platinum—jewelry, chiefly, because it is expensive; the higher price for platinum, to many people, would be to encourage it for uses in jewelry, and in all cases we should attempt to increase the price for the nonessential rather than the essential uses. Would that be a sufficient force to allow the proper curtailment, in your judgment, between an essential and a nonessential use?

Mr. INGALLS. That view is frequently advanced. It is frequently said that with high prices, consumption is going on just as it used to, but in fact it does not.

Mr. MUDD. In other words, nonessential uses are often able to pay the higher price for a commodity than the essential uses?

Mr. INGALLS. Of course they may be, but generally they do not.

Mr. MUDD. Because in many cases the nonessential uses are luxuries.

Mr. INGALLS. It has been the invariable experience of the world that high prices restrict consumption, whether of luxuries or otherwise.

(Mr. Ingalls was thereupon excused.)

Mr. DAY. Mr. Chairman, I would like to have permission to insert in the record some data which have come into my possession to-day, and I will do it at a future time.

The CHAIRMAN. Very well. The committee will now adjourn until to-morrow morning at 10 o'clock.

(Accordingly at 12.35 p. m. the committee adjourned until to-morrow, Saturday, May 11, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

**SATURDAY, MAY 11, 1918.**

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met at 10 o'clock a. m., Senator Charles B. Henderson (chairman) presiding.

Also present Dr. Van. H. Manning, Director of the Bureau of Mines, and George Otis Smith, Esq., Director of the United States Geological Survey.

## STATEMENT OF HON. POPE YEATMAN, CHIEF OF NONFERROUS METALS SECTION, WAR INDUSTRIES BOARD.

The CHAIRMAN. Mr. Yeatman, will you please state your name and occupation?

Mr. YEATMAN. My name is Pope Yeatman; I am at the head of what is called the nonferrous metals section of the War Industries Board. That section, however, only takes in copper, lead, zinc, antimony, aluminum, nickel, and mercury. All the rest is in the explosive and chemical section.

The CHAIRMAN. Are you familiar with the bill that passed the House of Representatives to encourage the production of certain metals?

Mr. YEATMAN. Yes, sir; I am.

The CHAIRMAN. You testified, did you not, before the House committee at the time they had this bill under consideration?

Mr. YEATMAN. I did.

The CHAIRMAN. Will you look at the bill and tell the committee what metals and ores you handle in the War Industries Board that are referred to in this bill?

Mr. YEATMAN. Antimony and mercury.

The CHAIRMAN. Will you explain to the committee what you have done with reference to antimony and encouraging its production in this country?

Mr. YEATMAN. Nothing has been done in connection with antimony at all, for the simple reason that at the present time there are such large stocks of antimony in this country which were imported at the time the price was very high. There is very little antimony in this country that can be produced at a price in any way approaching the price of the imported, and on account of the large stocks on hand and the safety, as far as the Government was concerned in its getting its requirements, nothing has yet been done about a further native production.

The CHAIRMAN. What supply is there in this country at this time?

Mr. YEATMAN. We can not tell exactly, but I should say there was a sufficient supply for from six to nine months if no more imports come in. They are coming in at all times, however. A little production in this country comes from ores outside of the United States, mostly from Mexico, a little from Canada, and some ores are brought in from Bolivia and from the Orient, but there is very little production by smelters from our own ores.

The CHAIRMAN. Where do we get our main supply of antimony at the present time?

Mr. YEATMAN. From China.

The CHAIRMAN. Will you now take up the situation relative to mercury and its production and supply?

Mr. YEATMAN. We find that the estimate of the Geological Survey for mercury production for 1918 is about 35,000 to 36,000 flasks of 75 pounds each, and the estimate as to the imports is something like 5,000, making a total of about 41,000 flasks.

The Government requirements, as far as we have been able to figure them out from information obtained from the Navy and from the War Departments, including the Ordnance, Signal Corps, Quartermaster, and Medical Corps, is probably 15,000 flasks. The Government has arranged with the producers for its requirements, practically for the whole of this year. The producers have voluntarily agreed to furnish the Government quicksilver at the price of $105.75 a flask, delivered at the Brooklyn Navy Yard, or $105 a flask delivered to Mare Island Navy Yard. An agreement has been reached with the importers, who represent the importations from Mexico, mainly, for the delivery of what is called "reclaimed" or "recovered" quicksilver, at a price delivered in New York of $100. Nothing has been done about fixing a maximum price, but the importers and the producers realize that if they let the price—that is, the price to the commercial users—go too high, the Government will step in, so that instead of being regulated directly the price is being regulated indirectly. We have had a number of conferences with the quicksilver people and we have asked them what the possibilities were for further increase, without very much encouragement, however, in their replies. They have felt that if a high price was fixed for quicksilver that numerous small producers would be brought forward, but the aggregate would not amount to a great deal.

Now, we had felt that it was not necessary to fix a regular Government price on quicksilver, because what we believed the needs of the Government to be was small in comparison with the total production, and it has been the policy of the War Industries Board and the price-fixing committee to interfere with prices as little as possible, and only when it seemed necessary to control production or to increase production of a metal which was what you might call on the ragged edge, when we were afraid we would not get enough of it.

Quicksilver at the present time does not seem to be in a dangerous condition. The mutually agreed price is now lower than the price for commercial users, and they all seem satisfied as far as the price is concerned.

The CHAIRMAN. Why did the War Industries Board feel that it was not advisable to fix prices?

Mr. YEATMAN. They wanted to interfere with the regular course of trade as little as possible, and only came in where they felt that some regulation was necessary—that is, to avoid having a runaway price, or to stabilize the price in some such way as to encourage production if production was too light.

The CHAIRMAN. Did this board feel that if they interfered with the price and began a price-fixing arrangement that it might interfere with the production of the metal?

Mr. YEATMAN. No; but they simply were averse to stepping in where the law of supply and demand would take care of the business itself.

The CHAIRMAN. They felt, then, that wherever the law of supply and demand would take care of the matter they would let that proceed along its usual lines?

Mr. YEATMAN. Yes, sir.

The CHAIRMAN. Did I understand you to say that the same price for mercury delivered at the Brooklyn Navy Yard prevails at the Mare Island Navy Yard?

Mr. YEATMAN. We allow 75 cents a flask in addition for delivery to the Brooklyn Navy Yard. The production is in California and in Texas, and we allowed them delivery, California, $105, and we thought that 75 cents a flask in addition was enough to cover the freight from California to the Brooklyn Navy Yard.

The CHAIRMAN. So they get 75 cents more a flask on delivery at the Brooklyn Navy Yard?

Mr. YEATMAN. Yes, sir; that is not regular price fixing; it is simply an agreement made, not with the price-fixing committee but by the producers themselves.

The CHAIRMAN. That is a private arrangement between the Government and the producers?

Mr. YEATMAN. It is a private arrangement.

The CHAIRMAN. For simply the Government requirements?

Mr. YEATMAN. The Navy is making contracts on that basis, you see.

The CHAIRMAN. Will you explain how the arrangement is made between your board and the Navy?

Mr. YEATMAN. Well, I would not say our board. It is simply with the section head.

The CHAIRMAN. That is with you?

Mr. YEATMAN. With me. We called the Navy representative into consultation after we had had several conferences with the producers, to see if we could not arrange with him a method by which the Navy would receive all of the quicksilver for the use of both the Army and the Navy. The Navy was quite willing, so we got the Ordnance Department to come into this arrangement, or rather to talk the matter over with us, and it, too, was quite agreeable to this arrangement; also the Signal Corps. So what has been actually done is that the Navy makes the contract, and then enters into a private agreement with the Ordnance Department or with the Signal Corps, by which the Navy agrees to furnish all the Signal Corps or the Ordnance Department requirements. We made an arrangement with the producers by which they agreed to set aside a certain portion of their production monthly and turn that over to the Navy. The Navy makes special contracts with them.

The CHAIRMAN. You act, then, in an advisory capacity?

Mr. YEATMAN. As an intermediary, really, and in an advisory capacity, also.

The CHAIRMAN. You gather the data on these various metals that are under your control and furnish that to the Navy Department?

Mr. YEATMAN. Yes.

The CHAIRMAN. And they make the contract direct with the producer?

Mr. YEATMAN. They make the actual contract. We make the arrangement and they make the actual contract.

The CHAIRMAN. Mr. Baruch is at the head of the War Industries Board, is he not?

Mr. YEATMAN. Yes, sir.

The CHAIRMAN. Did you hear his testimony before the House committee when they were considering this bill?

Mr. YEATMAN. I did.

The CHAIRMAN. I will call your attention to a sentence from his testimony, where he said:

> We are performing a large measure of control now, but I think it ought to be more definitely and legally fixed than it is.

What is your opinion with regard to that matter?

Mr. YEATMAN. I agree with that entirely.

The CHAIRMAN. You feel that some such legislation as proposed here is needed in order to fix—legally fix—the right to handle and control these metals?

Mr. YEATMAN. The only way, previously to say a month ago, that this could be done was by mutual agreement or by the power the President had for commandeering; also the power that the Army and Navy had for commandeering certain necessaries for carrying on the war.

The CHAIRMAN. Have you found in your experience as the head of this particular department that some such scheme as you have has worked satisfactorily and all right for the Government?

Mr. YEATMAN. As far as the metals are concerned that we come in contact with—that is, copper, zinc, lead, aluminum, and mercury—it has worked out satisfactorily, but we feel that if we had to go still further and take up manganese and pyrites and chrome ore, which are in Mr. MacDowell's department, that it would be very much more difficult, that we would have to use methods in trying to increase production, that we have not so far employed, and that some such law as the war-minerals bill would make it very much easier for the department, or for any department, and much easier for the producers themselves. The work that we had to do was with already organized companies which were working and had been working on rather a large scale, and it was easier to get them together than it would be a thousand and one small concerns scattered all over the country.

The CHAIRMAN. Do you feel that it is necessary to provide for price fixing in this bill?

Mr. YEATMAN. I do; yes, sir.

The CHAIRMAN. Why?

Mr. YEATMAN. I do, for this reason, that in every conference that we have ever had the producers have always asked for that, and the

reason they have asked for price fixing has been that they wanted to know, they wanted to feel that the business was more or less stabilized; they wanted to feel that if they started in new—as many of them would have to do—they were going to be able to count on some regular price, and such price as would be made regular by the Government fixing it.

Senator SHAFROTH. Does not that apply, however, to the fixing of a minimum price only?

Mr. YEATMAN. Not necessarily, no; even if it is a maximum price. If it is a maximum price, it is a price beyond which they can not go, but at the same time they feel that something is fixed. They would all prefer a minimum price, but many of them feel that even with a maximum price a great benefit would result.

Senator SHAFROTH. Have you noticed the experience we have had with wheat, in fixing a maximum price?

Mr. YEATMAN. Yes.

Senator SHAFROTH. Have you not observed that the production has diminished instead of increased, where you fix a maximum price too low?

Mr. YEATMAN. No, sir; I have not noticed that, if that is too low in the case of wheat. I think I understand the idea was to fix a price that was sufficiently high to tempt all the farmers to produce all the wheat possible.

Senator SHAFROTH. That is true, but it has turned out that they can sell their barley and their rye and their oats at a much higher price than the price fixed for wheat——

Mr. YEATMAN. Yes.

Senator SHAFROTH. And the statements in the Senate have shown that people have been feeding wheat to animals because it is the cheapest food. That evidently would exhaust the supply which we are so anxious to get, and it is because of the fact that the maximum price, relative to other things they could raise, was too low.

Mr. YEATMAN. Yes.

Senator SHAFROTH. Now, do you not think that if you fix the maximum price it would have to be a very high price, which would practically amount to no fixing at all, in order to avoid that same condition?

Mr. YEATMAN. I do not think so, because we have done that in the War Industries Board. We fixed a price on copper which was a maximum price, but which on account of consumption being about equal to the production amounted to both a maximum and minimum price. We fixed a price in connection with what is called the grade A spelter, which was a maximum price, and it was fixed at a fairly high price in order to bring in a production from other spelter manufacturers who were not at the time making this grade A. The result is that the Government is now having a very much larger production of grade A spelter, and the price has come down.

Senator SHAFROTH. Of course, under the principle of supply and demand, if by reason of the increased production the operation of supply and demand applies, of course it would naturally bring down the price?

Mr. YEATMAN. Yes.

Senator SHAFROTH. But if you fix a price that is too low it will discourage production, will it not?

Mr. YEATMAN. There is no doubt about that.

Senator SHAFROTH. And if you fix a price which to-day is a fair price on which metals can be produced, and yet at the same time, by reason of the increase in the cost of labor or by reason of increase in the cost of everything that goes into it—powder and everything else—that price would make it so that they could not afford to produce the metals at that price, under those circumstances it would discourage production, would it not?

Mr. YEATMAN. That is true, but this is what we have done, as far as our price fixing is concerned: We fix a price to-day that is subject to revision in three months or in four months, or in whatever length of time the trade ask for. In the case of copper we fixed the price on September 21, last, the revision to take effect prior to the 31st of January. Before the 31st of January the price was fixed again, to be revised after the 1st of June. In the case of aluminum we fixed the price to be revised on the 1st of June. For high-grade zinc and sheet zinc the same time was fixed.

Senator SHAFROTH. Did not those producers require that there should be a long period of time so that they could open up new mines—this price fixing?

Mr. YEATMAN. We have left the matter to them to decide among themselves, and so far they have asked for three months or four months.

Senator SHAFROTH. I have heard in the case of copper that while we were getting copper at 23½ cents under requirements, that England had for a long time paid Canada 30 cents a pound; now, is that correct?

Mr. YEATMAN. I really do not know about that.

Senator SHAFROTH. It has been asserted on the floor of the Senate to that effect.

Mr. YEATMAN. I have learned from the British war mission that such is not the case.

Senator SHAFROTH. And it was thought that it was not fair to the producer of the copper or the miners of the United States.

I understand the object of this bill is first to increase the production of certain articles, and in order to increase the product a minimum price must be fixed, do you not think so, in order to insure that new development will take place and new mines will be opened, and upon a definite time, or a time of considerable length, so as to justify the investment?

Mr. YEATMAN. I do not feel absolutely that a minimum price is necessary; no, sir. I would say that ordinarily, if it had not been for our experience.

Senator SHAFROTH. And ordinarily that would produce an increased product, would it not?

Mr. YEATMAN. Ordinarily that would.

Senator SHAFROTH. Now, in the case of the maximum amount, of course if you are going to vary it from time to time I should think that the operator would not increase the production; that is, he would not go into the extension of his business, or opening up new mines that seem to be so essential to this increased production?

Mr. YEATMAN. Well, I only know what my experience has been in talking with the producers themselves, that in every case they have

asked first for the minimum price. Take the lead people; or take the spelter people, for instance. We have told them, "Now, if we fix a minimum price it will mean that in order to hold that, the Government will have to purchase a large amount of your product. If there is not enough consumption the Government will have to hold the excess, that is, a certain amount of it," and when peace is declared, or even before, that will always stand out as a danger to the industry, and they will always be fearful that this excess will be thrown on the market at any time and might result in a disastrous slump in prices.

Senator SHAFROTH. But if there is no minimum price that same condition of low price will follow really after the war, will it not?

Mr. YEATMAN. If we accumulate. We do not want to accumulate beyond a certain amount.

Senator SHAFROTH. But that is a matter of administration, is it not?

Mr. YEATMAN. Yes; but they feel, if they have a reasonable price, not a minimum price—have what is called a maximum price—that with these imported materials in part cut off the law of supply and demand will raise the price up to a reasonable figure, and the producers are really willing to go in on that basis. At least every one I have talked to has felt that way. The quicksilver, the manganese, and the chrome people have all felt that way.

Senator SHAFROTH. Do they understand the operation of the maximum price?

Mr. YEATMAN. I think so.

Senator SHAFROTH. Well, do they not realize the fact that if wages should treble and machinery and everything should quadruple, and the cost of production increase far beyond what the maximum price is, that they can not get any more for it?

Mr. YEATMAN. But that is subject to revision.

Senator SHAFROTH. But that is not a maximum price for any period of time, is it?

Mr. YEATMAN. It is not for any period of time such as you talk of—two years' time, that is true. I believe in a minimum price, as far as the production of wheat is concerned, and I carry that still further to other cereals, because we have felt that we needed an excess production there; but that excess production could be handled, and it was necessary to bring out that production for war needs—that is, for the needs of our allies, as well as ourselves—and that a minimum price there was absolutely correct. We wanted an excess production, if it was possible; but in most of our minerals we do not feel that that is absolutely necessary.

Senator SHAFROTH. Then your theory is not to fix a maximum price for a long period of time?

Mr. YEATMAN. No, sir.

Senator SHAFROTH. Nor do you believe in fixing a minimum price for a long period of time?

Mr. YEATMAN. No, sir.

Senator SHAFROTH. Say two years, and you think you can get an increased production notwithstanding you do not guarantee for a long period of time?

Mr. YEATMAN. I think so.

Senator SHAFROTH. Then what advantage has that over the ordinary principles of supply and demand as applied to metals right now without any law?

Mr. YEATMAN. We are in a condition of war now. The ordinary laws of supply and demand are upset. That is the reason that our zinc had gone up—the price of spelter went from 5½ up to 27 cents; the price of high-grade spelter went from 8 or 9 cents up to 42 cents; the price of copper went up to 35 or 36 cents; the price of copper to-day, if we did not have a maximum price, would go up to 35 or 40 cents without giving us very much extra production. I do not suppose we would get 5 per cent extra production of copper. It is the same way with all our metals.

Senator SHAFROTH. Those are not industries that need stimulating, are they?

Mr. YEATMAN. No, sir; they do not need stimulating now, but they need a certain amount of control and stabilization; that is our opinion.

Senator SHAFROTH. The object of that, then, is to catch the profits and prevent these combinations of individuals who produce from making a large amount of profit. That must be the object in the event you are attempting to bear the market.

Mr. YEATMAN. By fixing the maximum; yes.

Senator SHAFROTH. Now, do you not think that object could be attained with some equality among the producers by simply saying that we will catch that by an excess war-profit tax; that a man who makes a large amount of profit by reason of this will have to turn over to the Government 60 per cent of it?

Mr. YEATMAN. I do not think so; no, sir.

Senator SHAFROTH. And the man who makes a little profit will have to turn over a smaller percentage, as the law now stands?

Mr. YEATMAN. I do not think that would be the case. I think that when we let all of our industries run away this way that it all comes back to this—as soon as you allow the price in any direction to rise, in sympathy or because of example another industry raises its price. Take, for instance, the little merchants around a town. If the butcher finds that the grocer is getting more he begins to pile an extra price on his commodity. That condition of added price or pay goes back to the laborer, and then the process of additional costs and prices begins all over again, and it simply means pyramiding continues all along the line. That is the reason, I think, the runaway market should be controlled. Otherwise we never can satisfy the common people when it becomes necessary to reduce prices and never get back to anything like normal conditions again unless we have a great calamity of some kind.

Senator SHAFROTH. Do you not recognize that there would be a great variation in cost of production of these metals?

Mr. YEATMAN. Yes, sir.

Senator SHAFROTH. The mine that is located close to a railroad has unquestionably an enormous advantage over the mine that is 60 miles in the interior. Now, in fixing that price you would naturally fix some kind of medium price, a price that would stimulate production by the man who is near the railroad but that would probably discourage the production by the man who is off the railroad a considerable distance, because he could make no profit. Now,

does not that irregularity in fixing a price work to the detriment of increasing production in mines beyond a certain area from the railroad, for instance?

Mr. YEATMAN. We have tried to fix that price at such a figure as would give the different mines a profit even greater than they got before the war in order to give greater encouragement to help them on.

Senator SHAFROTH. But you fix it always on wages and cost of machinery and powder, and things of that kind that go into the explosives at the price at the time of fixing, do you not?

Mr. YEATMAN. Surely.

Senator SHAFROTH. And that rises——

Mr. YEATMAN. For instance, we knew last September that wages were rising, and knew that supplies were rising; we knew, of course, the prices before the war and the prices at the first part of 1917—that is, prices for commodities and for explosives, etc.—were greater. We took that into consideration. We felt that the selling prices we were allowing the copper industry would be sufficient to tempt them to increase production or keep up normal production at any rate, and that it would give them a fair price not only at that moment but to cover the possible increases that were being made all the time.

Senator SHAFROTH. But that covered no period of time of any length?

Mr. YEATMAN. No, sir; only four months; that is all they asked for.

Senator SHAFROTH. Do you think that any new manganese mines or tungsten mines would be opened by simply saying that you will fix a price for four months?

Mr. YEATMAN. No, sir; I would not advise that; in fact I did not advise it in regard to those other metals. I said, "Why restrict the time to three or four months; why not make it for a longer period?" I think the reason the industries did not care to have it fixed for a longer period of time was that they hoped, the next time, to get a little better price.

Senator SHAFROTH. Also, I should think, due to the fact that the rise of wages and materials, and the elements that enter into production have increased, perhaps?

Mr. YEATMAN. Well, say that is another reason they had in view. We had taken that into consideration at the time we fixed the price. Now, take the case of manganese or chrome, and metals of that kind, I should want to fix the price for a longer time and have it subject to revision if in the meanwhile it was seen that the industries were suffering.

Senator SHAFROTH. Do you not think that the war-profit tax would have a tendency to equalize these profits? The war-profits tax now has a graduated scale; if a profit of more than 15 per cent is made it is very slightly taxed, and it goes up—the highest is, I think, some 60 per cent.

So that if a man makes an enormous profit, which is an undue profit, say 100 per cent, he has got to pay 60 per cent of it into the Treasury, and does not that make a more regular and uniform encouragement instead of a discouragement of having a fixed price that probably does not fit the condition?

Mr. YEATMAN. I do not think so, for this reason: People know that certain mines, we will say copper mines, produced at 10 cents a

pound at a time when they were getting 15 or 15½ cents for their product. Now, should they know that these mines were getting 30 cents a pound for their product they would not take into consideration what the war tax was—they would not know what their war tax was, and would make no allowance for it. The laboring man, or the man who supplies the material to them, would say, "These men can produce copper at 15 cents, or 12 cents, and they are getting 30 cents. We would like to have part of that. They would not know what the income tax of the producer was.

Senator SHAFROTH. But the copper company evidently knows.

Mr. YEATMAN. The copper company knows, that is true.

Senator SHAFROTH. Because they know if it is a profit of 100 per cent of course they have got to yield up 60 per cent to the Government.

Mr. YEATMAN. If it were only one copper mine, I would say that is quite correct. But it affects every industry and every company which is a producing company.

Senator SHAFROTH. In your judgment, then, should each one of these metals that are described in this bill be made the subject directly of a maximum price?

Mr. YEATMAN. I would not say a maximum price was the best way to reach any of those things; no. I think you would have to take them separately. You would have to consider each metal separately to see what is the best plan for that particular metal.

Senator SHAFROTH. And your theory is that the maximum price should be fixed for a short period only?

Mr. YEATMAN. No, sir; I do not say that. I say that I have, in connection with those metals that I have mentioned, recommended a longer period than has been chosen by the price-fixing board or by the War Industries Board.

Senator SHAFROTH. Now, how long a period would you say as to manganese?

Mr. YEATMAN. I would say a year as to manganese. Just offhand: I would say a year.

Senator SHAFROTH. And as to tungsten?

Mr. YEATMAN. Well, I do not know so much about that. I would not say to-morrow, if the matter was brought up to me, that I would fix a maximum price, or any price. I would want to study the special industry, but I would say that in most of these some price fixing would be desirable, and that it ought to go into a law.

Senator SHAFROTH. In the case of, say, manganese, do you think that a miner would enter upon the opening up of a new enterprise when the maximum price is all that he possibly could obtain? He would be subject to the principle of supply and demand downward, until perhaps it would be a price below cost. Do you think that would encourage the production of new manganese enterprises?

Mr. YEATMAN. If he thought that it was going to be produced in such large quantities as to bring it below cost, it would not encourage it; no, sir. I do not believe, however, that such is the case.

Senator SHAFROTH. And yet the object of this bill is, more than anything else, to increase production, is it not?

Mr. YEATMAN. That is true, and I think we are going to get it. I think you will get it with a reasonable price on the metal for the

period of a year, and I do not think you are going to get overproduction in the period of a year or a year and a half.

Senator SHAFROTH. Do you not recognize that in all mining there is a speculative element that goes into it?

Mr. YEATMAN. Absolutely.

Senator SHAFROTH. And when you attempt to curb a maximum price, unless you make that maximum price very high, they will say, "We do not care to go into it."

Mr. YEATMAN. Yes; I realize that point, but there are maximums and maximums, and the maximum price that should be put on is what one would call a reasonable price.

Senator SHAFROTH. In putting on that maximum price, what profit would you say you would allow them in the manganese ores?

Mr. YEATMAN. If I were going into it just as a commercial business, without considering patriotism or anything of that kind, I should want in a manganese property, 25 or 30 per cent.

Senator SHAFROTH. And in the case of tungsten also, would you not?

Mr. YEATMAN. Oh, yes, sir. Those are occurring more or less in the form of pockets; also chrome ores. As far as the mines in this country are concerned, they are very uncertain, most of them.

Senator SHAFROTH. That is all I care to ask, Mr. Chairman.

The CHAIRMAN. Mr. Yeatman, what is the price of manganese today?

Mr. YEATMAN. I do not know. Mr. MacDowell can tell you that better than I.

The CHAIRMAN. Can you tell us what the price is, Mr. MacDowell?

Mr. MACDOWELL. I was just looking for it among my papers. The chiefs in the chemical section handle each one of these metals. I have it here; it is from $35 to $60 per ton for high-grade ore delivered to the furnace.

Mr. YEATMAN. Would you make that the maximum price?

Mr. MACDOWELL. I do not know that I would make it the maximum price. I should have to study that.

The CHAIRMAN. That would depend upon conditions?

Mr. YEATMAN. Absolutely. I could not say as to that offhand. I would have to study all those conditions very closely.

Senator JONES of New Mexico. Mr. Yeatman, you have laid down a general principle of which I approve very much, and that is that we should not interfere with the ordinary channels of production and trade any more than is necessary. Now, if power were given to any board at its discretion to fix maximum prices for all these commodities mentioned in this bill, would that of itself not have a tendency to put a wet blanket over the industry, whether the power were ever actually exercised or not?

Mr. YEATMAN. I do not think so. I think the maximum price that would have to be put on would be a price that was very much greater than heretofore they have been getting. Heretofore they have had to come into competition with imported ores from Brazil, in the case of manganese; from New Caledonia, in the case of chrome ore; from Ceylon, in the case of graphite. I think much of the high-grade manganese came from India before we got the ore from Brazil. We are still bringing in a certain tonnage from Brazil in the case of man-

ganese and almost all the imported tonnage of chrome ore. I think the maximum price that would be placed on any of those metals by any board would be much greater than the producers have been getting in the past and would be a price that would encourage them and encourage them greatly.

Senator JONES of New Mexico. Do you believe that that would have a tendency to encourage any new production?

Mr. YEATMAN. Yes, sir.

Senator JONES of New Mexico. Let me understand that. We use the word "encourage." How do you reason that the fixing of a maximum price would encourage production?

Mr. YEATMAN. I think in this way: I think the producers would think that they would be able to reach a price very considerably over what they had been getting and somewhere near what the maximum price might be.

Now, the reason I speak of this maximum price is this. As soon as it was known that manganese ore and chrome ore were to be cut off by the Shipping Board on account of needing the ships, people who previously were mining and were willing to sell their product at the prevailing rates tried to run them up and nearly doubled the rate, if I am not mistaken, in the case of chrome.

Mr. MACDOWELL. Yes.

Mr. YEATMAN. Where they were getting in the neighborhood of a little over a dollar a unit, they would try to run the price up to $2 a unit. It was absolute profiteering and unnecessary in the way of bringing out a greater production. It would bring out a greater production, but such price should bring out increased production by using a maximum price which was reasonable and at the same time large enough to encourage them.

Senator JONES of New Mexico. Then, in such case as you mention, in order to encourage production in this country, domestic production, your fixing of a maximum price would have to be attended with restriction of importation, would it not?

Mr. YEATMAN. It is already. That is the reason, or one reason, why we are particularly anxious at the present time to increase the production of chrome ore, of manganese ore, of pyrites, and in a small way of other metals. We are anxious particularly not only to increase the production in this country but to make this country self-sustaining, so that we shall not be dependent on other countries, and if our shipping is still further cut off we will still be able to run along.

Senator JONES of New Mexico. Would you be willing to give to any Government agency the right to fix a minimum price on these various metals?

Mr. YEATMAN. The reason I have been opposed to a minimum price more particularly is that once you introduce minimum price everybody wants it, and it is not necessary. All groups of producers have all first asked for it.

The CHAIRMAN. When you entered into a contract with mercury producers to furnish the Government mercury at $105, and allowed them to sell to private industries at whatever prices they could get, did you not practically establish a minimum price for mercury?

Mr. YEATMAN. We established a contract price.

The CHAIRMAN. But would not that be practically the result?

Mr. YEATMAN. Yes, I think it will be; but that happens to be a thing that was not done by strict Government authority. It was a contract between the Navy and the individual producers, and the Government minimum could be used, but it would not be used as a general thing.

The CHAIRMAN. Well, it was not used in the contract, as I understand?

Mr. YEATMAN. No.

The CHAIRMAN. Of course, the Government was getting as good a bargain as it could.

Mr. YEATMAN. No; I would not put it in that way. We wanted to encourage the industry and yet we did not feel that it was right to let the business run away, and we did not feel like putting a final price on it.

The CHAIRMAN. Well, $105 to the Government still allows a producer a reasonable profit, does it not?

Mr. YEATMAN. Oh, yes, sir.

The CHAIRMAN. And when the producer sells to the consumer for $120 he is doing just that much better and making a larger profit, because that is the profit between $105 and $120?

Mr. YEATMAN. Yes, sir.

Senator JONES of New Mexico. Mr. Yeatman, what minerals come directly under your supervision?

Mr. YEATMAN. Why, under this law, simply antimony and mercury. I have to consider aluminum, copper, lead, zinc, and nickel in addition.

Senator JONES of New Mexico. I see that the bill does not propose to interfere with copper and zinc or lead or nickel. Now, why are not those minerals brought into this bill?

Mr. YEATMAN. I think those minerals are not brought in because there would be such strong opposition from so many large interests. When the bill was brought up before I think that was one trouble or one reason why it was not carried through. These minerals were mentioned in the previous bill last fall. It was also felt that it would not be necessary to include them in the bill.

Senator JONES of New Mexico. Why should those large interests oppose bringing those metals under this bill?

Mr. YEATMAN. Well, no interest likes to be interfered with by Government control any more than is absolutely necessary.

Senator JONES of New Mexico. That is coming around to the suggestion which I had in my first question, namely, if it would be an obnoxious thing to these large industries, why would not any sort of bill be likewise obnoxious to these smaller industries?

Mr. YEATMAN. My answer to that is that the smaller producers whom we have seen have invariably asked for it, for—I would not call it Government interference, but Government help; I do not mean financial help—but the producers feel that their business should be stabilized. There are a lot of small men scattered here and there and everywhere, and they feel that having the Government come in sort of stabilizes their business. Now, I guess the large industries do not feel that that is necessary.

Senator JONES of New Mexico. With respect to antimony and mercury, do you think you need any more power than you have now?

Mr. YEATMAN. Possibly; if you want to increase the production of antimony, yes; if you want to make local production.

Senator JONES of New Mexico. Do you think we ought to endeavor to take up that enterprise?

Mr. YEATMAN. If I felt that it would be a good thing to encourage production in this country so that we would be self-contained and able to produce everything ourselves and not be dependent upon China or any other country, why, that would be a different matter. Should China get into war with Japan and have her ports blocked, we would have then to go to work and encourage our own industries and get our own plants started. We have antimony in this country, but we can not produce antimony at a cost of anything like what we can purchase it at the present time. If we want to be self-contained, we must encourage the antimony people.

Senator JONES of New Mexico. In view of the familiar conditions at the present time, and in view of the stupendous task which we are now performing, do you think it advisable at this time for us to embark upon the business of encouraging the production of antimony in this country?

Mr. YEATMAN. I have been thinking very seriously of that in the last week or so. What brought it to my mind is this: We arranged for the purchase of antimony for the different departments of the Government; that is, we asked for tenders on antimony. We got in touch with the importers or with the producers, and in arranging for this last contract for the Ordnance Department I was a little surprised that there were not larger quantities of antimony in the hands of any but a very few people, say 8 or 10. I found that it was more scattered than I realized; and if it is scattered in that way, and if we have to pick up little dabs here and there, it might be dangerous. Since taking that matter up the question of antimony has appeared more serious to me than it had before.

Senator JONES of New Mexico. You say you have been studying the question seriously. Have you reached any definite conclusion concerning it?

Mr. YEATMAN. No, sir; I have not. I am rather favoring the question of increasing our production, but I am not in such a position as to formulate recommendations at the present moment.

Senator JONES of New Mexico. Then you think that as far as antimony is concerned there is nothing in connection with that commodity requiring the immediate action of Congress?

Mr. YEATMAN. I would like to see the law go through with respect to antimony, and in case we find it is necessary we will have that law at our hand.

Senator JONES of New Mexico. You say you would like to see this go through. You mean this bill?

Mr. YEATMAN. I would like to see the bill go through covering antimony.

Senator JONES. How would this bill affect antimony?

Mr. YEATMAN. It would give the power to help along by one way or another, by price fixing, or agreeing to make contracts for other production which would be price fixing in a way. It would help the industries in one way or another as recommended in that bill.

Senator JONES of New Mexico. Do you understand that this bill gives the right to make contracts for purchase.

Mr. YEATMAN. Yes, sir.

Senator JONES of New Mexico. Of unlimited amounts?

Mr. YEATMAN. Well, there is no limit stated there. Provision is made for an appropriation.

Senator JONES of New Mexico. Have not the branches of the Government requiring antimony for their uses the right to make these contracts now?

Mr. YEATMAN. For more than their immediate needs: no, sir. You see, they can not go beyond their immediate needs, for the simple reason that the appropriation was so made that if they overbuy there is no provision made for sale except by condemnation, and when condemnation proceedings are carried out and sale made the funds go back into the Treasury of the United States and can not be used again for the purpose for which the original appropriation was made.

Senator JONES of New Mexico. Now, would you want the Navy Department, for instance, or the War Department, to have authority to make contracts beyond its needs?

Mr. YEATMAN. No; I would not want to have them do it, because I think it would be better in the hands—all such authority would be better in the hands of the department that is held responsible for arranging for these supplies—that is, the department which has in its hands the encouragement or the keeping up of production, or if production is not great enough the substitution of other metals.

Senator JONES of New Mexico. Then would you limit this power to contract or to buy to the present or prospective needs for Government uses only?

Mr. YEATMAN. No, sir; Government uses or allied uses, or, as is the case of commercial uses, if it is found necessary. For instance, in the case of pyrites, that pyrites would be turned over——

Senator JONES of New Mexico. Now, let us confine ourselves to antimony.

Mr. YEATMAN. All right.

Senator JONES of New Mexico. I would like to do that.

Mr. YEATMAN. That is such an unimportant thing, really.

Senator JONES of New Mexico. Here is just what I am trying to get at. It is running in my mind that it would be unwise to pass any legislation which will give blanket authority to cover practically all these minerals in the same way. It may be necessary to deal with one mineral in one way and another mineral in another way, as you have already indicated.

Mr. YEATMAN. Yes; that is quite true.

Senator JONES of New Mexico. And it is felt by some of us, and is running in my mind—it is not a fixed conclusion, but for the purposes of this investigation we can not help but formulate in our minds some sort of theory with reference to which we should investigate, so that is the thing that is running in my mind. Now, with regard to antimony, how would you handle that—what would you do with that?

Mr. YEATMAN. If that were taken over, I would say, if we had to increase the production of antimony in this country, that probably we would want to be allowed to purchase the product from these smelting companies or from mining companies at a price that would have to be greater than the price at which we could import, and

we would ask to be allowed to purchase the product, and then we could turn it over, allocate it to the Army and Navy. We could not wait for a tariff. If there was time enough we would ask for a tariff, but if we wait to bring up a tariff before Congress we would have to stop the war—and we can not do that.

Senator JONES of New Mexico. Now, what industries use antimony?

Mr. YEATMAN. Oh, antimony is used for pigments; it is used particularly now for shrapnel; it is used for medicine, but what interests the Government more particularly is the use of antimony in the manufacture of shrapnel.

Mr. MACDOWELL. It is used also in smoke shells.

The CHAIRMAN. Is it not an alloy of lead, used to harden bullets?

Mr. MACDOWELL. Yes; and in the manufacture of printing type to harden the type so that it will wear well.

Senator JONES of New Mexico. I see by some figures I have before me that the imports of antimony last year were over 10,000 tons—that the imports of antimony for four years before the war did not average—that is, antimony ore—did not average a thousand tons. Of the antimony metal, in 1917, we imported over 17,000 tons, and before the war the importations were, I should say, less than 5,000 tons.

Mr. YEATMAN. Yes, sir.

Senator JONES of New Mexico. Now, is that increased importation occasioned by the increased use of the metal for war purposes?

Mr. YEATMAN. Yes, sir.

Senator JONES of New Mexico. Well, then, if you had a purchasing agency buying antimony in a quantity to anticipate the immediate needs of the Government for war purposes, and something more, in order to insure an abundant supply, if the war should cease, you would have an enormous quantity of that metal on hand which could not go into domestic trade for several years to come, would you not?

Mr. YEATMAN. Yes, sir.

The CHAIRMAN. I would like to have Mr. Yeatman, if he can, explain right here, why our domestic production in 1917 fell short of the domestic production in 1915 and 1916, if there was such an increased use of the ore?

Mr. YEATMAN. I think in 1915 and 1916, if I remember correctly, the price was very, very high, and in 1917 it began to drop very much.

Senator JONES of New Mexico. What is the cause of that drop in prices?

Mr. YEATMAN. The cause of that drop in prices was that they had expected a great demand for antimony, and there were very large importations, and a larger production in China than there had been. So they imported in the hope of getting very high prices, and they imported very large amounts, as I understand. The Geological Survey can tell you more about that particular point than I could.

Senator JONES of New Mexico. What about these prices; how have the prices varied?

Mr. YEATMAN. The prices have been over 30 cents——

Senator JONES of New Mexico. In what unit is the price?

Mr. YEATMAN. A pound. The old price used to be 8 and 9 cents a pound.

Senator JONES of New Mexico. What is the price now?

Mr. YEATMAN. We bought a thousand tons last week at 12¼.

Senator JONES of New Mexico. Would the price of 12¼ increase the domestic production?

Mr. YEATMAN. No, sir.

Senator JONES of New Mexico. What price do you think would?

Mr. YEATMAN. Well, considering domesic production, the price of 14 and 15 cents would increase the amount very largely of antimony smelted in this country, but that would be antimony brought in from Mexico or Bolivia. I do not believe that a price of very much less than 20 cents—18 or 20 cents; I am saying this offhand—would bring out very much production in this country. Of course, I am not giving you accurate figures.

Senator JONES of New Mexico. I understand. We are approximating all the way through. Then you would probably have to add 10 cents a pound to the price of antimony in order to encourage the domestic production—strictly domestic production?

Mr. YEATMAN. I should say 8 or 10 cents. Do you know about that, Dr. Manning?

Dr. MANNING. No, sir.

Senator JONES of New Mexico. We are using, I should judge, in round figures, something like 20,000 tons of metal at the present time, and——

Mr. YEATMAN. I should say fifteen to twenty, somewhere along there.

Senator JONES of New Mexico. That would amount to 40,000,000 pounds, and at 10 cents a pound increase in price it would amount to the sum of $4,000,000. The tonnage required to import this product, considering what is already produced in this country, would be sufficient to bring in seventeen to eighteen thousand tons. Four million dollars would build about four good big freight steamships, would it not?

Mr. YEATMAN. Surely.

Senator JONES of New Mexico. And one load of those steamships would bring in all the antimony required?

Mr. YEATMAN. Yes, sir; as a commercial proposition it would not be good. The only point is making of production sure in this country.

Senator JONES of New Mexico. Now, where would this antimony be produced in this country?

Mr. YEATMAN. There is a plant in New Jersey, and there is also a plant at Los Angeles, Cal.

Senator JONES of New Mexico. Where does the New Jersey plant get its ore?

Mr. YEATMAN. I think most o fthe ore comes from Bolivia.

Senator JONES of New Mexico. Then that plant would go out of business, would it not?

Mr. YEATMAN. They have been getting a little ore. They are producing a little antimony, but not from native ores. You see, there is what we call the native production. Our production is mainly from foreign ores. However, we get some from California.

Mr. MUDD. California, Nevada, and Utah.

Senator JONES of New Mexico. Now, if we were to cut off the imports and say that we would have no tonnage used in the antimony

industry, it would put the New Jersey plant out of business, would it not?

Mr. YEATMAN. I think practically so; yes, sir.

Senator JONES of New Mexico. And the domestic production would have to come from far west?

Mr. YEATMAN. Yes, sir.

Senator JONES of New Mexico. Most of the antimony which is used is in the East, is it not?

Mr. YEATMAN. Yes, sir.

Senator JONES of New Mexico. Then we would have to haul this tonnage clear across the continent and put that much more of a burden upon the railroads of the country?

Mr. YEATMAN. Yes, sir.

Senator JONES of New Mexico. Now, considering all these factors, do you think it advisable for us to undertake now—considering the necessities for the use of money in other things—do you think it advisable for the Government now to embark upon the proposition of urging the domestic production of antimony to such an extent as to make it unnecessary to import any of it.

Mr. YEATMAN. As a business proposition I should say no.

Senator JONES of New Mexico. Well, considering our relations with China and with Bolivia, do you think, as a governmental policy at the present time—of course, you have got to consider the financial side of it along with the other side, and is it not necessary also to take into consideration the disturbance of our trade relations with the foreign countries?

Mr. YEATMAN. To a certain extent; yes, sir.

Senator JONES of New Mexico. China is buying a good deal of United States products, and we have got to get paid for that in Chinese products, somehow or other, directly or indirectly, and do you think under all the circumstances that we would be justified at this time in taking up the question of antimony for the purpose of making our domestic production meet our demands?

Mr. YEATMAN. At the present time I should say no. That is the reason I say that I had not thought it necessary, and simply had it under consideration. It is one of the least important of all the metals that you are considering. Is this a question of cutting out first one word and then another?

Senator JONES of New Mexico. I think that is precisely what we want to do.

The CHAIRMAN. Yes; take the bill and go through the metals and give us your opinion as to the metals that should remain in the bill and the metals that might come out.

Mr. YEATMAN. I should rather give you only the two metals that I have under my charge.

The CHAIRMAN. That is antimony and mercury?

Mr. YEATMAN. Antimony and mercury; yes, sir.

Senator JONES of New Mexico. Now, let us take up mercury. You have given us the production of the quantity used. I notice from the memorandum of the Geological Survey that the imports of mercury last year were a little over 5,000 flasks?

Mr. YEATMAN. Yes, sir.

Senator JONES of New Mexico. Of 75 pounds each?

Mr. YEATMAN. Yes, sir.

Senator JONES of New Mexico. Where did that come from?

Mr. YEATMAN. Mainly from Mexico—it was imported.

Senator JONES of New Mexico. Is there any special reason why that importation should cease?

Mr. YEATMAN. No; it may diminish.

Senator JONES of New Mexico. And I notice, also, in this memorandum that the domestic production is 120 per cent of the consumption?

Mr. YEATMAN. We had to help our allies to some extent. Some of the mercury is sent over to Canada.

Senator JONES of New Mexico. Well, I see that the price of quicksilver or mercury has more than doubled; it is about two and one-half times now what it was before the war?

Mr. YEATMAN. Well, since before the war it was over three times, I should say.

Senator JONES of New Mexico. The prices of the Geological Survey are given there [indicating].

Mr. YEATMAN. Well, it had sold as low as $39.

The CHAIRMAN. And here, in this line, in 1908 the average price per flask was $44.17. In 1917 the average price per flask was $106.12, and your contract for the Government has been $105?

Mr. YEATMAN. One hundred and five dollars. The cost is supposed to be about $85. I think the average was $80, and some costs more than that—up into the nineties. You can not fix this price at the average, you see. We have to fix it at a higher price than that.

Senator JONES of New Mexico. What is there, in view of the various points we have just been discussing, that needs to be done with the mercury industry?

Mr. YEATMAN. Well, I should say, immediately, nothing; our own needs are supplied. If anything should happen to Spain, if Spain should get into the war, we could not supply our allies; that is all.

The CHAIRMAN. The contracts that you have just referred to are for what period of time?

Mr. YEATMAN. Up to the 1st of January.

The CHAIRMAN. The 1st of next January?

Mr. YEATMAN. Yes, sir. I think some run several months over.

Senator JONES of New Mexico. Of course we want to aid our allies in every possible way, but do you think that the situation would justify our assuming the burden of anticipating and supplying the mercury for the use of ourselves and our allies?

Mr. YEATMAN. I should think that in the case of necessity we ought to be ready to take hold of that. If it were left to me to-day, and this law was passed, and it had in it that particular metal, I would probably do nothing with it right away. But I would like to have the power or be in a position without waiting for Congress to reconvene to be able to go ahead, as would be done with other metals. I am just speaking of that personally. Of course, I would not have charge of that, but I mean if I had this matter in my charge and was considered the right person to look after it, in case of emergency I would like to be able to act.

Senator JONES of New Mexico. Do you anticipate any such emergency?

Mr. YEATMAN. There is a possibility of it. There is a possibility of it in connection with one or two other metals.

Senator JONES of New Mexico. I mean with respect to antimony?

Mr. YEATMAN. I would say so with respect to mercury; yes. If anything should happen to Spain, we would be right up against it.

Senator JONES of New Mexico. How does Spain figure in this?

Mr. YEATMAN. It supplies a great deal of quicksilver to the allies for fulminates and for medicines and for corrosive paints and things of that kind.

Senator JONES of New Mexico. That is the principal source of supply of our allies?

Mr. YEATMAN. That is the principal source of supply; Spain.

Senator JONES of New Mexico. But in the absence of that supply, being cut off, you can not anticipate any?

Mr. YEATMAN. No; we are going along satisfactorily as it is, with no other troubles coming in.

Senator JONES of New Mexico. Assuming that supply to be cut off, what action would be necessary?

Mr. YEATMAN. I think we would have to go to work very vigorously and in every way possible increase production, which is not possible under the present prices.

Senator JONES of New Mexico. Would you increase the price in order to do that?

Mr. YEATMAN. We would have to. We would have to take in low-grade deposits, which can not be worked at the present time at present prices.

Senator JONES of New Mexico. Would you make any blanket increase in price?

Mr. YEATMAN. Do you mean to cover all?

Senator JONES of New Mexico. To cover all the industries?

Mr. YEATMAN. That is questionable. I would not want to do that.

Senator JONES of New Mexico. Well, some of these producers are making large profits now, are they not?

Mr. YEATMAN. Some of them are producing at $70 or $75 a flask.

Senator JONES of New Mexico. And to increase the price beyond the $105, which you are now paying to all of these producers, would enable some of them to make enormous profits, would it not?

Mr. YEATMAN. Certainly.

The CHAIRMAN. But if they had to work the low-grade ores there would be larger expense and they would not make so much profit?

Mr. YEATMAN. Oh, no, sir. These same companies that are making large profits on the ores that they are treating at the present time could not make anything like the same profit on the lower-grade ores.

Senator JONES of New Mexico. Then, as I understand you, the only reason why you would include mercury in this bill would be because of the possibility of the supply from Spain being cut off?

Mr. YEATMAN. Yes, sir; or of demands very much greater than they are now, which I do not anticipate.

The CHAIRMAN. The same condition exists with reference to many of these metals mentioned in this bill?

Mr. YEATMAN. Yes, sir.

The CHAIRMAN. There is no need of immediate legislation to take care of the situation on some of them, but the idea is to have legislation covering all, so that when the time comes to act you have the power to act and go ahead?

Mr. YEATMAN. That is all. There are some that are extremely necessary. There are some of these smaller and less important metals that are not necessary.

The CHAIRMAN. What ones are extremely necessary?

Mr. YEATMAN. I think pyrites and manganese and chrome and graphite—quite a number of them.

The CHAIRMAN. And tungsten?

Mr. YEATMAN. Tungsten—I am not quite so sure of. I am not so well acquanted with that.

Senator JONES of New Mexico. I suppose we might just as well take up one of those ores.

The CHAIRMAN. I would like to ask Mr. Yeatman just one question. What business were you connected with before going into the War Industries Board?

Mr. YEATMAN. I have been consulting mining engineer in gold, silver, copper, lead, and zinc.

The CHAIRMAN. And your place of business was in New York?

Mr. YEATMAN. In New York; yes, sir.

Senator JONES of New Mexico. Mr. Chairman, I would like to ask a few more questions. Will you please tell us about the organization of this War Industries Board? I do not believe that has been gone into in the record, as yet. How is it organized, and what are its functions?

Mr. YEATMAN. That is some problem. I think we will have to send you one of these things showing just what that is [indicating].

Senator JONES of New Mexico. Can you not tell us briefly?

Mr. YEATMAN. The War Industries Board is a board formed to look after and to keep in touch with all the industries bearing on war necessities. For instance, they look after sulphuric acid, explosives, and the metals; they look after the question of wool, cotton, leather, manufactured products, such as boots and shoes and Army clothing; and they look after all steel products that go into the manufacture of munitions and the building of railways and the building of ships. It takes in what we call all war industries.

Senator JONES, of New Mexico. I assume also that your various activities are divided and put under separate control, at least in a measure?

Mr. YEATMAN. There is a committee, and under the committee work section heads. For instances, Mr. Replogle has iron and steel. He looks after the whole of the steel industry. He has under him certain heads, experts, who are conversant with special branches of iron and steel industry. Mr. Sommers has charge of explosives and chemicals, and he takes up the question of nitrates, of sulphuric acid—of all chemicals that might be used for war purposes. He also has the ferro-alloys. He takes into consideration the metals that go into the manufacture of steel ferro-alloys.

Senator JONES of New Mexico. Now, as to these metals mentioned in this bill, what are you doing with reference to them now, and what sort of organization have you?

Mr. YEATMAN. Well, my own particular organization at the present time consists of only four men, with the usual clerks. Mr. Summers's organization has as many as 20, I think.

Mr. MACDOWELL. About 13 commodity sections.

Senator JONES of New Mexico. How many commodities have you under you?

Mr. YEATMAN. I have seven.

Senator JONES of New Mexico. How many of them are mentioned in this bill?

Mr. YEATMAN. Two—antimony and mercury.

Senator JONES of New Mexico. Now, by what authority—I mean legal authority—do you exercise your function with reference to antimony and mercury?

Mr. YEATMAN. I do not know. I am appointed by the War Industries Board to act as chief of that section. There is some legal authority in the way of the President's appointing Mr. Baruch as chairman of the War Industries Board and laying down certain things which he is supposed to do. That is the legal authority. Under that legal authority I suppose we work. Prior to that it was an advisory board largely under the Council of National Defense.

Senator JONES of New Mexico. Now, assuming Mr. Baruch present and acting in your capacity, I mean assuming that you had all the authority of Mr. Baruch—what would that legal authority be? What could you do under existing legislation?

Mr. YEATMAN. I think that a great deal of our authority would be more or less indirect. Our authority over others, our power to get others to act, would be more or less indirect.

Senator JONES of New Mexico. You spoke of some power existing, for instance, the power of commandeering.

Mr. YEATMAN. Well, that power is given to the President, the Secretary of War, and the Secretary of the Navy. They have the right to commandeer, and prices have been arranged by the War Industries Board through mutual agreement with producers. Heretofore it has been largely an indirect power, with the right to fall back on the Army and Navy and President.

The CHAIRMAN. If this bill should become a law, what would become of these various heads that are now operating under the War Industries Board?

Mr. YEATMAN. They would still act.

The CHAIRMAN. And there would be the head created under this act, and the War Industries Board would go along just the same?

Mr. YEATMAN. I do not suppose it could go along just the same, because this act imposes certain duties on whoever takes charge of the minerals bill. It gives him certain duties.

The CHAIRMAN. It would relieve your board of handling these ores mentioned in this bill?

Mr. YEATMAN. To a certain extent, but we would still feel responsibility, and still have to act in an advisory and less executive capacity perhaps than before in keeping in touch with the different departments of the Government, and in showing them where they could get these metals, and if it was possible to get them.

Then, in addition, I think the President has the price-fixing committee.

Mr. MACDOWELL. It is a part of the War Industries Board and in a sense independent. The President, in writing Mr. Baruch, gave him certain authority and certain powers to carry on the work.

Senator JONES of New Mexico. Now, Mr. Yeatman, if we should undertake the things contemplated by this bill, would it not be

better to confer the power upon the President, so that he could use any activity which he already has?

Mr. YEATMAN. I think so.

Senator JONES of New Mexico. Rather than specifically designate some branch of the Government?

Mr. YEATMAN. Well, I think so; yes, sir. He might designate one of those very efficient branches of the Government, the Geological Survey or the Bureau of Mines, or he might designate the War Industries Board, I do not know.

Senator JONES of New Mexico. Under the Overman bill, which was passed, the President has the right to coordinate the different branches of the Government, but if by acts of Congress passed after the enactment of the Overman bill, specifically designating one branch of the Government to take charge of this industry, I can see how from a legal point of view the President might be restricted in coordinating those activities. Now, take your division, for instance. You have four experts working with you?

Mr. YEATMAN. No; I have four men in my department. I have four assistants.

Senator JONES of New Mexico. And what salaries do they receive?

Mr. YEATMAN. I think only one of them gets a salary from the Government.

Senator JONES of New Mexico. To give point to what I am stating, Mr. Yeatman, is this thought, that if you already had an organization which was effective and ample, why the necessity of creating another organization somewhere else in the Government? That was the purpose of my question.

Mr. YEATMAN. Well, the original idea of the War Industries Board was that it be an advisory board. It is becoming more and more executive. It has been executive, but only till lately through indirect means.

Senator JONES of New Mexico. I suppose you have quite a coterie of clerks?

Mr. YEATMAN. Yes; quite a few. Those are paid by the War Industries Board.

Senator JONES of New Mexico. About how many?

Mr. YEATMAN. Well, in my department I do not suppose there are more than five or six. In your department, Mr. MacDowell, there are a great many?

Mr. MACDOWELL. Yes, sir.

Senator JONES of New Mexico. Now, it seems to me that if another independent agency were created and to confer upon it direct authority to control all of these metals here, it would practically eliminate your activity?

Mr. YEATMAN. No, sir; it would not eliminate ours, because there is much work of an advisory nature and some of an executive nature that ought to still be carried out, and to have that carried out in connection with metals that do not appear here at all or chemicals or other products.

The CHAIRMAN. Like leather, as I understand?

Mr. YEATMAN. Yes.

Senator JONES of New Mexico. I am speaking with respect to those metals that would go into this bill.

Mr. YEATMAN. Yes.

Senator JONES of New Mexico. If this bill were to pass conferring this authority, we will say, upon the Secretary of the Interior or the Bureau of Mines or the Geological Survey, as far as those metals are concerned, all authority would be taken away from you, would it not?

Mr. YEATMAN. As far as dealing with the increase of production and the price is concerned, that would be. With regard to price, we are simply in an advisory capacity now: we do not fix the price that goes——

Senator JONES of New Mexico. You do fix the prices as far as they are fixed, do you not?

Mr. YEATMAN. No, sir.

Senator JONES of New Mexico. Who does that?

Mr. YEATMAN. That is the price-fixing committee. This particular matter of quicksilver was a little agreement, that was all; that was not anything in the nature of a fixed price, but actual price-fixing is taken in hand by a committee of seven men, and we, the section heads, simply act in an advisory capacity.

Senator JONES of New Mexico. Please tell us about that price-fixing committee; who composes that committee?

Mr. YEATMAN. The Chairman is Mr. Robert S. Brookings, who is a member of the War Industries Board; then there is Mr. Taussig of the Tariff Board, Lieut. Col. F. S. Young, Paymaster John M. Hancock, Hugh Frayne, a member of the War Industries Board, Dr. Harry A. Garfield, head of the Fuel Administration, and Mr. W. B. Colver, chairman of the Federal Trade Commission.

Mr. MACDOWELL. And Mr. Harris of the Federal Trade Commission.

Mr. YEATMAN. It is Mr. Colver; Mr. Harris resigned.

Senator JONES of New Mexico. Then to pass this bill, and to put these minerals under the Secretary of the Interior would take away from that price-fixing board any authority which it now exercises with respect to those minerals, would it not?

Mr. YEATMAN. To those minerals on which it has not exercised its authority so far.

Senator JONES of New Mexico. Why has it not exercised its authority with respect to those minerals thus far.

Mr. YEATMAN. I think one reason is because this bill is up before Congress, and Congress is taking action on these particular metals which they were not fearful of before, because they did not realize the great danger in the shipping, they were busy in other things. They felt, in connection with pyrites, for instance, that they could get plenty of pyrites from Spain, just as they always had; that they could get manganese from Brazil, just as they had been doing, and that they could get chrome ore from New Caledonia, just as they had before. So the necessity apparently had not arisen prior to the time of the consideration by Congress of the mineral bill last fall. I imagine that is the case.

The CHAIRMAN. Did not some of the departments have this matter in mind last October and discuss it months ago?

Mr. YEATMAN. The war-minerals bill came up last autumn, in October or November.

Dr. MANNING. It was early in the fall, I do not know the exact date.

Mr. YEATMAN. There was an independent committee appointed with the help of the technical societies that was trying to aid in every way it could, and the committee went into the question independently in conjunction with the Geological Survey and the Bureau of Mines.

Mr. MACBETH. Mr. Chairman, I would like to make the situation somewhat clearer in regard to grade A spelter mentioned by Mr. Yeatman, that price-fixing has encouraged an increased production. Mr. Yeatman, is it not a fact that the Army and Navy having accepted double distilled spelter at the time of the meeting held on spelter about 60 days ago, greatly increased the production?

Mr. YEATMAN. Yes, sir.

Mr. MACBETH. Has not that increase come from accepting the double distilled zinc?

Mr. YEATMAN. Yes, sir.

Mr. MACBETH. Which heretofore has not been accepted?

Mr. YEATMAN. It had not been accepted. It is accepted now by the Ordnance Department but not by the Navy. Its acceptance has increased the production.

Mr. MACBETH. But has the electrolytic spelter increased as the result of your increasing the price on grade A?

Mr. YEATMAN. I do not know about electrolytic, but the double distilled has.

Mr. MACBETH. And this increase is due to accepting the double distilled zinc?

Mr. YEATMAN. Yes, sir.

Mr. MACBETH. And not in any other manner. I simply wanted to bring that out in connection with the matter of price fixing. There is one question that I would like to ask, and that is in the matter of the copper situation with respect to price fixing. Has the price fixing of copper at 23½ cents encouraged development and the opening up of any new mines in 1917?

Mr. YEATMAN. No; I do not think it has.

Mr. MACBETH. Has it not had a tendency to discontinue development of mines in the West?

Mr. YEATMAN. Perhaps so, but not to what I should call an appreciable degree.

Mr. MACBETH. I am in a position to know with regard to the small western producers, that the price established at 23½ cents is rapidly driving them to the wall, and they will all be compelled to go out of business; it will disturb our entire copper business, the price of 23½ cents, and it will be in the hands of the Anaconda, Utah Copper and other porphyries, and also the Phelps-Dodge interests. That is about the situation in the West in consequence of your price-fixing at 23½ cents. I had the cost sheets of some companies. In fact I showed one to one of Senator Poindexter's constituents a few days ago, showing that they were obtaining 20½ net in smelter deductions, and the cost was 17½ and 18 cents. Those people produced a small amount, I think about 2,000,000 pounds, but they can not continue. I know other properties in a similar condition. I merely wanted to show the committee that price fixing, so far as copper is concerned, has not worked out satisfactorily, except with regard to large companies that can make copper at a cheap price.

Senator JONES of New Mexico. Have you anything more to suggest, Mr. Yeatman? I did not know but our colloquy here might bring out something that was in your mind that you would like to mention.

Mr. YEATMAN. You kept me thinking so hard on what you have asked me that I have not gone afield on anything else.

The CHAIRMAN. Have you anything to say with reference to what Mr. Macbeth has just called our attention to?

Mr. YEATMAN. No, sir.

(Mr. Yeatman was thereupon excused.)

## STATEMENT OF MR. CHARLES H. MacDOWELL, CHIEF OF THE CHEMICAL SECTION OF THE WAR INDUSTRIES BOARD.

Mr. MACDOWELL. Mr. Chairman, I might say that our work is handled by commodity chiefs. Each commodity is in charge of a man familiar with it.

Senator JONES of New Mexico. Mr. MacDowell, which of these metals mentioned in the bill come under your supervision?

Mr. MACDOWELL. The first one which has been active is bromine. Bromine is found in certain bitterns after the salt has been taken out, and is also found in certain salt waters. The largest production is at Midland, Mich. Bromine is used largely for medicinal purposes and photographic use, and is coming in quite extensively in trench warfare.

It is also manufactured by a number of small producers along the Ohio River.

Senator JONES of New Mexico. I see by the statement of the Geological Survey that there are no imports.

Mr. MACDOWELL. No; formerly most of the bromine was secured as a by-product in the manufacture of potash in Germany. Potash mines had small bromine plants for making this particular chemical. Mr. Dow started his industry in Midland, Mich., and seemed to get the "know how" pretty well. The Germans came over here and tried to drive him out of business. Mr. Dow went over to Europe with his product and fought them, and before he got through they concluded that they did not want to drive him out of business. So there are no imports.

Senator Jones of New Mexico. Does he practically produce all that is produced in this country?

Mr. MACDOWELL. The estimate given by the Dow Chemical Co. is that they can produce 1,100,000 pounds. American Bromine Co. produce 148,000 pounds, and the Ohio and West Virginia fields about 300,000 pounds, making a total normal production of 1,548,000 pounds of bromine.

Senator JONES of New Mexico. Is that all used in this country?

Mr. MACDOWELL. That was used in this country, and to a small extent in the exported chemicals made from bromine which go to other countries.

Senator Jones of New Mexico. I notice in this memorandum here before me that the total production in the United States has never much exceeded 900,000 pounds.

Mr. MACDOWELL. These figures are given by the manufacturers as their producing capacity, not perhaps what they may have done. I presume they balance that with the trade demands.

Now, since that production was not ample to take care of the Government's requirements for trench warfare, a contract was negotiated with the Dow Chemical Co. whereby the Government is sinking 17 additional wells near Midland, and the Dow Co. are putting in a bromine plant to take care of the brines. That is the step the Government had to take in order to get an increased production.

The CHAIRMAN. What department of the Government is handling this?

Mr. MACDOWELL. Contract was negotiated by the Procurement Division of the Ordnance Department, and was arranged for last winter. In addition to that, there are some new productions coming in, estimated at 130,000 pounds per annum. None of those will be producing before the fall. The Dow product will probably come in, I would say, in August or September, and the requirements for trench warfare are apparently unlimited; that is, they would like to get large quantities. It is necessary, so we are advised, to maintain the production needed for medicines.

The CHAIRMAN. The Government now is particularly interested on account of the asphyxiating gas work.

Mr. MACDOWELL. Yes; it is used in trench warfare for gas purposes, and probably more will be used for medicinal purposes, but the direct demand comes from the Ordnance Department, Trench Warfare Section, for this new production.

The CHAIRMAN. And the Government now is assisting in the production of bromine?

Mr. MACDOWELL. The Government has negotiated this contract and is putting down these wells to get the raw material for the Dow Chemical Co.

Senator JONES of New Mexico. And they brought about that increased production through a contract for the output?

Mr. MACDOWELL. Yes, sir.

Senator JONES of New Mexico. Do you know at what price?

Mr MACDOWELL. The price, as I recall it, is 45 cents a pound for bromine in mining salts; that is, instead of making liquid bromine they get it in salt form, which can be easily shipped. Bromine is ordinarily shipped in bottles made of a certain glass, and if they are broken there is considerable loss, so they hit upon the plan of making these mineral salts, which can be safely shipped to the point where the Government will make use of the bromine in the salts, the bromine contents to be paid for at 45 cents a pound.

Senator JONES. For bromine in the form of salts?

Mr. MACDOWELL. Yes, sir. It is in the form of salts.

Senator JONES. I observe from the prices before me that that is considerable less than the market price.

Mr. MACDOWELL. Yes. The market price has been considerably higher than this, although trench-warfare people have purchased liquid bromine from the Ohio manufacturers in quantity at 58 cents a pound.

Senator JONES. That affords a very interesting suggestion with regard to handling other minerals. If the War Department has authority to do that, has it not authority now to exercise the same power with respect to the other minerals which are needed for war purposes?

Mr. MACDOWELL. If the material is used directly by the Government, yes. But many of these minerals are used as raw materials by manufacturers working indirectly on Government products. Where there is the direct connection the Government has negotiated contracts to get the raw materials needed.

Senator JONES. As far as bromine is concerned, do you think that the situation is being handled pretty well now?

Mr. MACDOWELL. Fairly well, though the trench-warfare people say that they want more bromine if they can get it.

Senator JONES. Well, the power to get it already exists, I take it.

Mr. MACDOWELL. I think they can go ahead and negotiate contracts for further production.

The CHAIRMAN. There is one point there that might be considered. If in securing these supplies, say of bromine, we would get considerable on hand and the war should end, we have no authority now by which the Government could dispose of it if it did not need it, and under this bill we would have the right of resale and could distribute it among the industries that need it.

Senator JONES. I assume, in that connection, that the same thing may be said of every commodity which the Government is purchasing for war purposes, and doubtless some amendment to the existing law for disposing of certain supplies may be made by Congress later on when we come to the crossing of the bridge.

Mr. MACDOWELL. I believe they have to dispose of it by auction now. That is my understanding.

Senator JONES. Then do you see any necessity for this legislation, so far as bromine is concerned?

Mr. MACDOWELL. I think it is within the power of the Government to build a new plant in whole or in part to obtain this war necessity. I think they have that power.

Senator JONES. And, as far as you can see now, that will answer the purpose?

Mr. MACDOWELL. I should imagine so.

Senator JONES. Now, let us take up the next mineral.

Mr. MACDOWELL. Then we come to chromium—chrome ores. I would like to explain that I am not an expert in these matters. They are handled by the commodity chiefs, so I am dependent on what they tell me.

The CHAIRMAN. You may proceed and tell the situation with regard to chromium.

Mr. MACDOWELL. The production of chromite, as I have it in 1917, in the United States proper, was 41,681 tons of the oxide; Alaska, 714 tons; Canada, 32,457 tons of varying grades. The Canadian seems to be low grade—23 per cent. That tonnage is equivalent to about 47,000 tons of 50 per cent ore. We seem to have imported from Rhodesia and New Caledonia 52,850 tons, averaging about 55 per cent chromic oxide. So we produced in 1917 about 45 per cent of the total tonnage. The American ore has been used chiefly for chrome and for chrome brick. Some of the best of it has been picked out for use in making bichromates and ferrochrome, but in general it is too poor to be used that way. It has been rather poor in quality to be used for chemical purposes where high-grade material could be easily obtained by importation.

The estimate for 1918 for the United States, reduced to 50 per cent chromic oxide for manufacturing purposes, toals 130,200 gross tons, of which the ferrochromium manufacturers want 60,700 tons; the bichromate manufacturers, making it for tanning of leather and for chemical purposes, 40,000 tons; and refractories, 22,500 tons. That is what they would like to get. In making ferrochromium it seems to require a high grade ore, else the product has too much carbon in it to make a steel of the grade they want. It is used in making armor plate and projectiles, and armor-piercing materials. About 25,000 tons of ferrochromium has gone into pleasure automobiles. It is used as an alloy steel in the manufacture of motors. Bichromates are used for tanning leather and for paints. High-grade ores are desirable for that purpose. Chrome refractories are used almost entirely by the steel industry in lining furnaces. At a meeting of the steel people in Pittsburgh last week for the purpose of discussing the chrome situation, it was agreed to try to reduce the use of chromite to 2 pounds per ton of steel ingots. By stimulating the American production and by trying to use low-grade ores instead of high grade, we hope to reduce the imports of Caledonian ore from 75,000 tons, first figured on, to probably 45,000 tons. We are trying to produce about 50,000 tons of ore in the United States proper this year; that is figured as 50 per cent. This will not mean that any of this tonnage will really be 50 per cent ore. About 85 per cent of it will be 43.5 per cent average.

No prices have been fixed. The ores are much higher than heretofore. Chromite prices on the highest grade have run up to $100 per ton. The average price in California is about $1.70 per unit for good high-grade ore, which would mean about $75 per ton for a 44 per cent chromite oxide ore.

In 1917 California produced a little less than in 1916, showing the difficulty of increasing production of the ore even with higher prices. Practically all of the chromite of the United States comes from California, with a very little coming from Oregon and the other States. We hope to receive 30,000 tons of low-grade ore from Canada in 1918. The Army, Navy, Railroad Administration, etc., are working with us in the endeavor to conserve chromite, particularly in paints. The Railway Administration advises us that they will cease to paint with chrome for the time.

There has been another difficulty in increasing the production of ferrochrome, and that is a shortage of electrodes.

Senator JONES of New Mexico. In what form is this chromium found?

Mr. MACDOWELL. Mr. Smith can tell you better than I——

Mr. GEORGE OTIS SMITH. Chromic iron; looks like iron, most of it.

Senator JONES of New Mexico. It is not a by-product?

Mr. MACDOWELL. No, sir; it is a natural mined product.

Senator JONES of New Mexico. It is a natural product and is mined the same as other metalliferous ores?

Mr. MACDOWELL. Yes, sir.

Senator JONES of New Mexico. In what section of the country is it found?

Mr. MACDOWELL. Mostly in California, and a little in farther northwestern States.

Senator JONES of New Mexico. Is it concentrated or refined in the West before it is brought East?

Mr. MACDOWELL. I do not think it is. I think there is one small manufacturer of ferrochromium in California, but very small.

Senator JONES of New Mexico. It is used as an alloy, I understand, generally.

Mr. MACDOWELL. Yes, sir; it is used as an alloy and in making bichromates which are used in tanning leather and for pigments.

Senator JONES of New Mexico. Do you know anything about the supply in California and the Northwest?

Mr. MACDOWELL. Not positively. I have understood that there was a fairly good quantity there, but I could not state that authoritatively.

Senator JONES of New Mexico. Are you informed that that supply there is a large supply, or capable of being expanded so as to meet our domestic demands?

Mr. MACDOWELL. Personally I have rather a contrary opinion as to the grade. However, I think Dr. Smith could tell us much more about that.

The chrome situation we consider serious. For the higher grade of chrome we are dependent upon New Caledonia.

Senator JONES of New Mexico. Is not the shipping the sole and real difficulty, Mr. MacDowell, the chief difficulty?

Mr. MACDOWELL. Yes.

Senator JONES. Well, by arrangements with the Shipping Board, do you think you have the matter pretty well in hand?

Mr. MACDOWELL. I think for a few months we will get along fairly well, but we are worried about it, frankly. Imported ore comes a long way.

Senator JONES of New Mexico. I gather from the statement which you made that you are all working together to reduce the consumption, or to use domestic ores and low grades, and that sort of thing, to conserve tonnage?

Mr. MACDOWELL. That is right.

Senator JONES of New Mexico. And what is the principal purpose of your anxiety?

Mr. MACDOWELL. The reason for the anxiety is that high-grade ore has come from foreign sources, and now through the international boat situation shipments must be restricted. This causes us to study the problem of restricting its use in less essential ways and increasing the production here in every possible way.

Senator JONES of New Mexico. If you were to increase the production on the coast you would have the railroad people to deal with, would you not?

Mr. MACDOWELL. Yes, sir; we would have to transport it.

Senator JONES of New Mexico. And is not that situation rather acute?

Mr. MACDOWELL. It is acute in certain sections; less so on the trans-continental phases of it, but it is serious enough everywhere.

Senator JONES of New Mexico. How would the production in the United States be increased?

Mr. MACDOWELL. Well, that is difficult to answer. You have got to find deposits worth increasing or developing; then when you have solved that problem you can tackle the developing end. The

demand for chrome is not directly from the Government—it is from the steel industry and from the tanning industry and from the pigment industry. It is absolutely necessary to have chrome; but you see the Government itself can not go in at present and make contracts for chrome or assist in the building up of chrome deposits. You can not do it by contract—that is, broadly speaking.

Senator JONES of New Mexico. Because the Government chooses to purchase it in the form of steel?

Mr. MACDOWELL. That is it; yes, sir; or leather.

Senator JONES of New Mexico. Well, the steel interests so far have not appeared before us or shown much anxiety about getting governmental assistance in the matter.

Mr. MACDOWELL. Well, they may have confined their activities to us, perhaps. They have been around.

Senator JONES of New Mexico. I can see where you have doubtless been performing quite a valuable service to them in what you have been doing.

The CHAIRMAN. It is a serious situation, is it not, though, because if the steel companies do not get these metals they will not be able to furnish the Government or supply what they need?

Mr. MACDOWELL. Yes, sir; and it is almost as serious in tanning, because chrome tannage works much quicker. We need shoes and other leather equipment for the boys, and you have got to use chrome. You can not cut much out of that particular essential.

Senator JONES of New Mexico. That is why the Government has taken such a direct interest and gone to these various industries to see about the use?

Mr. MACDOWELL. Yes, sir; we were getting chrome in reasonable quantity from New Caledonia, and were of course using the shipping facilities of the world, and we were watching shipments to see that the flow continued. Some months ago the Shipping Board saw the necessity of curtailing the movement by water of every ton of stuff they could, and they began to study what could be cut out. Certain chrome-carrying boats were diverted, and then the worry began.

Senator JONES of New Mexico. Mr. MacDowell, do you know of any means—I mean, have you any suggestions of definite means which might be applied to increase the domestic production?

Mr. MACDOWELL. I can not suggest any definite program. The ore is taken and manufactured into ferrochromium by the electrometallurgical people, and they are the buyers of chrome, as well as the bichromate manufacturers. They apparently are not disposed to go into the mining of chrome. Up to now they have not had to. That, of course, puts it back on the man who has the chrome deposit to open it up and find a market for it, and that takes time and many of them have not the facilities for doing it, nor have they the money.

Senator JONES of New Mexico. But your familiarity with the quantity of ore mined in this country, and the prospect of the mines, is not sufficient to justify you in making suggestions as to increased production?

Mr. MACDOWELL. No, sir; I could not do that.

Senator JONES of New Mexico. Is there any one in your division who is in close enough touch with that to aid us in that direction?

Mr. MACDOWELL. I have talked to Mr. Sanford, who has that matter in hand, and he has not yet been able to make any constructive suggestions. He has not considered controlling prices. Since the partial embargo became known the domestic price, which was a dollar a unit in California, advanced to as high as $2, and it is now about $1.70. The market has not been controlled in the hope that the increased price would stimulate the miners to increase production.

Senator JONES of New Mexico. It would seem, then, that as far as price is concerned it is high enough to do all the stimulating that a high price would do?

Mr. MACDOWELL. Yes. That is the reason. It is only within the last two or three months that the situation has come to a head; and, as you know, mine development is slow business. It takes time to open up mines.

The CHAIRMAN. And the uncertainty of the market bears something upon it.

Mr. MACDOWELL. Yes, sir. I think you are now touching on one of the most serious phases of the whole thing—that is, the uncertainty of the market for these products over a period long enough to warrant the private individual putting in his money to develop his enterprise.

Senator JONES of New Mexico. I think you said that the price had gone up from $1 a unit to practically $2 a unit?

Mr. MACDOWELL. Yes, sir.

Senator JONES of New Mexico. And if the Government were to guarantee a price of $2 a unit for any considerable length of time we would meet with the same difficulty there as was suggested to these other metals, about having a surplus on hand, and that sort of thing.

Mr. MACDOWELL. Yes, sir.

The CHAIRMAN. You have some other metals that you handle, do you not?

Mr. MACDOWELL. There is fluorspar, which is found in several sections in large tonnage. It is only recently that fluorspar has been called to our attention for possible war use. It enters into the manufacture of aluminum.

Mr. MACBETH. Would pyrite answer the same purpose as fluorspar?

Mr. MACDOWELL. No.

Senator JONES of New Mexico. As to ferrosilicon, I see that we produce all we consume in this country?

Mr. MACDOWELL. Yes, sir; it is a power proposition. That is, it is an electric-furnace matter.

Senator JONES of New Mexico. And we are exporting nearly as much as we consume?

Mr. GEORGE OTIS SMITH. Nearly as much as we import, or more than we import.

The CHAIRMAN. We imported over 9,000 tons and exported a little over 6,000 tons.

Mr. SMITH. In six months.

Senator JONES of New Mexico. We exported over 6,000 tons in six months and imported 9,000 tons and over in the year. So we are exporting considerably more than we import.

Mr. MACDOWELL. Yes. It is manufactured quite largely at Niagara Falls from electric power there, and in a smaller way at Anniston, Ala., and I think there are other places where it is made.

Senator JONES of New Mexico. I do not know much about ferrosilicon. In what form is it contained?

Mr. MACDOWELL. They mix sand and iron ore together and smelt it in an electric furnace.

Senator JONES. I judged that was what it was. It is a combination of iron and silica?

Mr. MACDOWELL. Yes. It is done in a large way at Niagara Falls. There is no particular problem connected with ferrosilicon. Several concerns are manufacturing it and the production is up with the demand. The ingredients are plentiful and local. The main item is electric power and carbons. About five concerns will produce about 90,000 tons in 1918. It is selling at about $160 per ton, about double the prewar prices. No prices have been fixed.

Senator JONES. Then, as before stated, you have no suggestions as to what shall be done with ferrosilicon.

Mr. MACDOWELL. From our point of view it is what we call easy. It does not worry us.

As to graphite, there is a fair production of graphite in this country in Alabama, Pennsylvania, New York, and other sections, but the main supply of graphite for crucible manufacture has come from Ceylon and Madagascar. The Ceylon graphite is peculiar in structure. It comes in rather large pieces, and it seems to be necessary to use up to 75 per cent of Ceylon graphite in making graphite crucibles. The graphite made in this country is used in a small way in combination with the Ceylon and Madagascar graphite. We have had the graphite crucible makers and the graphite miners here, with the idea of getting them to agree to the greater use of domestic graphite with the foreign to reduce ocean tonnage and encourage the development of graphite here, and have restricted the importation of foreign graphite for the balance of the year. Most of the graphite found in this country is disseminated in small pieces through the rock and does not seem to have been locally concentrated, as is Ceylon graphite. We suggested to the graphite miners at that time, on the complaint of the crucible manufacturers, that they were not making a uniform product; that they arrange to study their milling process and see if they could not make a uniform product. It seems to have been uneven in quality, and apparently there was quite a misunderstanding between the crucible makers and the graphite miners on this score. Some of the mines are producing a uniform quality, but many do not. Mr. White, of the Bureau of Mines, advised that they would investigate and see if they could not help them make a uniform grade so that more domestic could be used in crucible manufacture. The United States will, however, have to import a certain tonnage of foreign graphite.

Senator JONES. Because we do not produce the quality?

Mr. MACDOWELL. We do not produce that particular quality, or do not seem to be able to find it.

Senator JONES. Now, as to the quantity which is necessary to be brought in—do you have any difficulty in allocating that?

Mr. MACDOWELL. We only took hold of it here two or three months ago when the 15,000 tons—as I recall—of the stock in the country was already distributed by the ordinary channels to these crucible manufacturers, but we will allocate that additional 5,000 tons. Our aim in allocating is to keep every plant running.

Senator JONES. I see that the domestic production has increased enormously.

Mr. MACDOWELL. It has.

Senator JONES. Is there a promise of further increase in domestic production?

Mr. MACDOWELL. The miners now are complaining that crucible people will not take their product. Some of them are slowing down in mining because they can not find a market. They have written us and have been complaining about it quite a good deal. We have had it up with the crucible manufacturers, but so far we have not been able to do much. The miners who are making a uniform grade seem to be shipping their product.

Senator JONES. There is no necessity, then, for increasing the production beyond finding new uses, is there?

Mr. MACDOWELL. No; but they must improve the quality of their product. They must be shown how.

Senator JONES. Are you doing that?

Mr. MACDOWELL. We are not doing it ourselves. We have suggested to the miners themselves that they establish a fellowship to study the question, to take it up as an industry; then it was suggested by Mr. White, of the Bureau of Mines, that the bureau might be able to undertake that work.

Mr. MUDD. The Bureau of Mines will soon have three men working on that problem. They will probably hold the first conference with three men before they take the field next week, and cover the problems of milling and the specification of which uniform grades will be standardized, and its industrial uses in the manufacture of crucibles and other products.

Senator JONES. Now, in that connection, it has occurred to me before—that is a service which the Government might perform at this time, not only with respect to graphite—in fact, I did not know the condition of the graphite industry until it was outlined by the witness—but has the Bureau of Mines now authority to furnish these experts for such industries as the graphite?

Mr. MUDD. Mr. Manning can answer that.

Dr. MANNING. We have.

Senator JONES. Then you have all the appropriation that you feel you need for that purpose?

Dr. MANNING. The appropriation was made by Congress recently, in the urgent deficiency bill, of $150,000 to do some of the things you have spoken of, and there was an estimate in the sundry civil bill of $100,000 additional, which will give us $250,000 as a preliminary to the work which is proposed under this bill, to aid the industries, you might say, in developing new processes, finding out what has been done in the industry, and apply that.

Senator JONES. Then beyond that, Mr. MacDowell, can you suggest anything else that the Government needs to do in regard to graphite?

Mr. MACDOWELL. I can not.

The CHAIRMAN. Are there any other metals that you handle, Mr. MacDowell?

Mr. MACDOWELL. There is manganese.

The CHAIRMAN. We have gone into matter to some considerable extent.

Mr. MACDOWELL. You have, perhaps, with others. We get the bulk of our high-grade ore from Brazil, and this last week additional boats have been arranged for. It looks as if we were safe for about three months now.

The CHAIRMAN. Are there any other metals on the list?

Mr. MACDOWELL. Mica, which is rather important, although it does not call for a large tonnage. It is used very largely in electrical work.

The CHAIRMAN. How much do we use?

Mr. MACDOWELL. I do not recall. I have an idea it is about 350 tons of the larger plates for the balance of this year; but it is not a heavy tonnage, as far as the tonnage goes. The better quality has been secured very largely from India, a quality that has certain electrical properties used in building up coils for wireless outfits; they have to have a high grade. That exportation has practically ceased; we are not getting any from there.

Senator JONES. I notice here in the memorandum which I have only sheet mica is causing any concern.

Mr. MACDOWELL. Yes, sir; the sheet mica.

Senator JONES. And of that the importations last year amounted to about 650 tons.

Mr. SMITH. That was the domestic production, Senator.

Senator JONES. Oh, that is the domestic production; I see.

The CHAIRMAN. The importation amounted to about 900 tons, estimated.

Mr. MACDOWELL. As I recall, the Government needs are about 350 tons—that is, the Government directly and indirectly.

Senator JONES. That tonnage question, then, would not be very serious as far as mica is concerned?

Mr. MACDOWELL. No, sir; it is getting the mica. The best mica has been coming from India, but little is coming from there now. Deposits are said to be controlled by pro-German interests.

Senator JONES. I see the price has increased—well, it varied from 24 cents a pound in 1908 and got down to 11 cents a pound in 1910, and up to 33 cents a pound in 1912, and it is now 67 cents a pound.

Mr. MACDOWELL. I think the large sheet mica is selling for around $3 or $4 a pound.

Senator JONES. As far as price is concerned, it is high enough, is it not?

Mr. MACDOWELL. Yes; it should be.

Senator JONES. Do you know where the deposits are and how the production could be increased?

Mr. MACDOWELL. I do not know. A good deal of it is found in North Carolina, in pieces of various sizes. In the springtime I believe they go out and hunt for it in the decomposed granite. It is pin money for the farmers. In several small towns in North Carolina people cut mica into sheets. As I understand it, a very fair quality of mica comes from North Carolina.

The CHAIRMAN. But the price now is high enough to stimulate production, if there is any to be found?

Mr. MACDOWELL. Yes; I think so; although the price has advanced recently, and it is hardly time to get returns in yet.

The CHAIRMAN. Are there any other metals that you handle in this list?

Mr. MACDOWELL. There are platinum and palladium. The platinum supply comes very largely from Russia. We are getting some from Colombia, and a little is recovered from placer mining and various mineral recoveries here, but that tonnage is small. Platinum is needed in the chemical industry, in the manufacture of contact sulphuric acid, and for the conversion of ammonia into nitric acid in fixation plants and frfom coke recovery. Last summer, seeing the necessity for increased production of sulphuric acid, steps were taken to import some platinum from Russia, and 22,000 ounces of crude material came through in December, intended originally for private use. When it reached this country it was commandeered by the Government and sent to the mint for refining. All platinum on arrival is requisitioned by the Government and released to necessary industries. It is one of the things we have been worried about. We have recently issued about 1,000 additional commandeering orders on stocks in the United States. Platinum before the war was selling for around $25 an ounce; it is now $105.

Dr. MANNING. What was the price of the Russian?

Mr. MACDOWELL. The price on the Russian was $95. The Government price now is $105. In refining platinum they get iridium and palladium. These metals are important. Platinum is used not only for chemical processes but for contact points on airplane magnetos and motor trucks, and it goes largely into dentistry. Nearly all of it comes from the Ural Mountains in Russia. There is enough platinum in the country in private hands, if we want to take it, but we would rather not do it.

Senator JONES. You say there is enough platinum in the country?

Mr. MACDOWELL. If we take all the platinum in rings and other jewelry; yes.

The CHAIRMAN. That would be by taking all the jewelry in the country and getting platinum from it.

Mr. MACDOWELL. Yes. We hear of platinum in the West, in the sands of the Northwest, and we hear of platinum possibilities in British Columbia, but nothing has been done, so far as I know, to see whether we could get any appreciable quantities.

Senator JONES. So far as the purchasing of it abroad is concerned, has any branch of the Government now authority to contract for it?

Mr. MACDOWELL. The Ordnance Department, I think, has been endeavoring to get further supplies from Russia through commercial channels.

Senator JONES. What could be done in addition to what is being done to increase the supply of platinum?

Mr. MACDOWELL. I do not know that anything more could be done to increase the supplies that are coming in from other countries. The price seems high enough to get it. As for the increased production of platinum in the United States, it is said that there is platinum in beach sands in the Northwest, and people have reported to us that with Government help they could get it out. Of course that is not a problem we could directly investigate.

Senator JONES. Whose problem is it?

Mr. MACDOWELL. I should say the Geological Survey. Undoubtedly they have done a lot of work and know what the possibilities are.

Senator JONES. But this legislation in this bill is not required for that purpose, is it?

Mr. MACDOWELL. I think under this bill they would have the power to prospect and investigate possible sources of platinum.

Senator JONES. Are you not doing that now?

Mr. MACDOWELL. No; we are not. We are endeavoring to get platinum from Russia and from Colombia, but are not doing anything in the way of developing the platinum supply of this country. All that is recovered from placer mining is turned in, but as to the development of platinum deposits, that has not yet been undertaken, as recovery processes are not fully developed.

Senator JONES. I take it that the Bureau of Mines already has authority to do that kind of service.

Dr. MANNING. Yes, sir.

Senator JONES. You would not advise the legislation which would warrant the Government at this time in going into a prospecting business, would you, of platinum?

Mr. MACDOWELL. I would not, any further than the prospecting the Geological Survey is doing all the time.

Mr. SMITH. We had three men hunting for platinum last year.

Mr. WHITE. If steps had been taken nine months ago to secure an adequate supply of platinum for our needs, could we have gotten it at that time, Mr. MacDowell?

Mr. MACDOWELL. For the past nine months, I think, about every opportunity of getting platinum out of Russia has been taken advantage of. We did not commandeer imports until about the first of the year.

Mr. WHITE. Would there not have been a considerable amount of material if commandeering had taken place sooner?

Mr. MACDOWELL. Yes; all of that which came in from Colombia and any other importation would have been available.

Mr. WHITE. Either this military necessity was not apparent, or power did not exist to take steps in time to secure as large an amount of platinum for military purposes as has since developed to be necessary?

Mr. MACDOWELL. Yes.

Senator JONES. You would not charge any other branch of the Government with anticipating military necessities, would you?

Mr. MACDOWELL. No. Of course, the anticipation of military necessities is rather a difficult thing. The War Industries Board, as I say, appreciated this probable shortage of platinum early, and followed the large shipment out of Russia and took hold of it when it arrived.

Mr. WHITE. Mr. Chairman, I should like to make my point a little clearer in order to fit into this general argument. If the Government had secured a supply of platinum maybe 12 months ago, or just at the outset of the war, we would have invested a very considerable amount of money for a stock of the material which, if the war had closed, would have been left on the Government's hands. That was not done for one reason or another, and we are facing to-day a very serious shortage in platinum for our most essential munitions industry, the manufacture of sulphuric acid. It is questionable whether we can entirely meet that or not, and this danger to the

military situation is so great that it would seem that the amount of money involved in accumulating a stock of material would have been a minor factor as compared to the military danger of the present situation. So it is one of those things where it might be advisable and even justifiable for the Government to accumulate stock and run the risk possibly of losing a part of the money invested if the war should end and the necessity should not arise.

Mr. MACDOWELL. I think the people saw the trend, and undoubtedly there was some accumulation of stock in private hands. We took all there was in the hands of the refiners; we have it in our hands, and it is allocated to users, we think, should have it. In other words, we control where it goes, and if the Ordnance Department or the Navy, or any contractor doing work for the Army or Navy or the allies need stock, we give it to them; we release it to them. We are offered platinum from time to time by people who have it, but there is difficulty in getting the money to pay for it. That is one of the troubles we have.

Mr. MACBETH. How far ahead are the Government requirements met on that?

Mr. MACDOWELL. I think we are all right until fall, and we also have private reserve to fall back on. There is platinum in the country if it is necessary to take it. I think the Ordnance Department have placed a small fund with the mint to pay for platinum turned in by private owners, a small revolving fund. I am not close enough to it to give you absolute information, but it is my understanding that there is a shortage of funds available for buying the platinum the people are willing to turn in. A good many would like to give it to the Government.

The CHAIRMAN. I would like to have you state, if you can, a concrete case showing the need of this legislation.

Mr. MACDOWELL. Looking to the future, we are concerned in regard to the supply of pyrites and brimstone for the manufacture of sulphuric acid.

Senator JONES. Mr. Chairman, I will state that I am very much concerned about manganese and pyrites, and sulphur especially, but as it is now 1.30 o'clock, I suggest that the committee adjourn until Monday.

(Accordingly, at 1.25 o'clock p. m., the committee adjourned until Monday, May 13, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

**MONDAY, MAY 13, 1918.**

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met at 10 o'clock a. m., pursuant to adjournment, at room 450, Senate Office Building, Senator Charles P. Henderson (chairman) presiding.

Present: Senator Jones of New Mexico.

Also, Dr. Van. H. Manning, Director of the Bureau of Mines, and Mr. George Otis Smith, Director of the Geological Survey.

## STATEMENT OF MR. FRANK H. BURNETT, OF BUFFALO, N. Y.

The CHAIRMAN. Give your full name and your residence.

Mr. BURNETT. My name is Frank H. Burnett; I reside at Buffalo, N. Y.

The CHAIRMAN. What business are you engaged in?

Mr. BURNETT. I am general purchasing agent of the Lackawanna Steel Co.

The CHAIRMAN. As such general purchasing agent, what products do you purchase for the company?

Mr. BURNETT. All materials, raw materials entering into the manufacture of steel—manganese ore, chrome ore, coal, coke, and limestone.

The CHAIRMAN. Take manganese ore, for instance; where do you purchase your main supply from?

Mr. BURNETT. We have recently considered our own supply as Brazil.

The CHAIRMAN. Before the war, where did you get your manganese ore from?

Mr. BURNETT. We were not manufacturers of ferromanganese before the war. We were buying the English ferro.

The CHAIRMAN. Why were you not manufacturers of ferromanganese before the war?

Mr. BURNETT. It did not pay to make ferromanganese, and of course, since the war, on account of the uncertainty of the English supply, it was necessary to go into the manufacture of manganese.

The CHAIRMAN. It was necessary to go into the manufacture of manganese because you could not get the supply that you had been getting before the war; is that the reason?

Mr. BURNETT. Yes, sir.

The CHAIRMAN. How long has the Lackawanna Steel Co. been manufacturing its own ferromanganese?

Mr. BURNETT. About two years.

The CHAIRMAN. And its principal source of supply has been Brazil?

Mr. BURNETT. All of the ore that we have made into ferromanganese has been imported from Brazil.

The CHAIRMAN. Up to the present time?

Mr. BURNETT. Up to the present time.

The CHAIRMAN. What supply have you on hand now to meet your requirements?

Mr. BURNETT. We have no ore on hand at the present time.

The CHAIRMAN. What do you do, then, to supply your needs?

Mr. BURNETT. We had a cargo of about 8,500 tons in January, and they ran a furnace for about 30 days in making ferromanganese. That furnace made probably about 4,000 tons, and that would take care of us for about four to five months. So we have no manganese ore on hand; we have ferromanganese.

The CHAIRMAN. And that will last you until when?

Mr. BURNETT. I figured before I came that it was between five and six months that we would have it on hand.

The CHAIRMAN. From now?

Mr. BURNETT. From now.

The CHAIRMAN. What have you done toward making arrangements to meet your needs after the present supply is exhausted?

Mr. BURNETT. We have an equity in a contract which the United States Steel Corporation has with a producer in Brazil.

The CHAIRMAN. Then you, at the present time, are relying upon the importation of manganese from Brazil, are you?

Mr. BURNETT. Yes, sir; and have made an effort to accumulate a tonnage of the domestic ferro, but have not been successful to date.

The CHAIRMAN. How much ferromanganese do you use a year?

Mr. BURNETT. Well, we will run about eight to nine thousand tons: between eight and nine thousand tons.

The CHAIRMAN. Of ferromanganese?

Mr. BURNETT. Yes, sir.

The CHAIRMAN. How much manganese ore does it require to make eight or nine thousand tons of ferromanganese?

Mr. BURNETT. I should say fifteen to sixteen thousand.

The CHAIRMAN. Then fifteen or sixteen thousand tons of manganese ore will supply the requirements of your company every year, will it?

Mr. BURNETT. If it is 48 to 50 per cent metallic manganese.

The CHAIRMAN. What is the grade of ore that you get in this country?

Mr. BURNETT. I have seen it offered all the way from 30 to 50 per cent metallic manganese.

The CHAIRMAN. Have you tried to get any manganese ore in this country since the war began?

Mr. BURNETT. We have had considerable correspondence with producers here and there, but have never been able to get anywhere with it at all.

The CHAIRMAN. You have not been able yourselves to get your supply from this country up to the present time?

Mr. BURNETT. No, sir.

The CHAIRMAN. Do you know how much manganese ore is used in the different steel companies in this country?

Mr. BURNETT. No, sir; I do not.

The CHAIRMAN. Are there any other companies doing a larger business than the Lackawanna Steel Co. that require a greater tonnage?

Mr. BURNETT. Yes, sir; I would say there were several.

The CHAIRMAN. Will you explain to the committee your method of handling manganese ore and the distribution of it in regard to your company?

Mr. BURNETT. Well, originally we had a conversion contract with E. J. Lavino & Co. They furnished the manganese ore and we converted it into ferromanganese at our Lebanon, Pa., furnaces, giving them so much ferro to pay them for their ore, and a certain percentage that was left was our own. We made a sufficient quantity of ferro in those furnaces before they were sold to the Bethlehem Steel Co. to take care of our own requirements for a certain length of time. They came up probably to about the 1st of April, our requirements. Then we secured a cargo from the United States Steel Corporation, in lieu of nondelivery of manganese ore on that contract which the United States Steel Corporation has and in which we have an equity of 20,000 tons.

Now, that is about the history of our dealing in manganese ore since we started to supply our own ferromanganese in the last two or three years, and of course since then we have been signifying our willingness to accumulate a tonnage of domestic ore, taking 300 or 500 tons where we could get it, but, as I said before, we have not gotten any ferro.

The CHAIRMAN. Before the war what grade of manganese ore did you use for your ferromanganese?

Mr. BURNETT. The contract called for 79 to 80—to average 80.

The CHAIRMAN. Have you made any other arrangements in regard to the grade of ore since the war began?

Mr. BURNETT. I did not attend that meeting in Pittsburgh of the steel men last Tuesday, but I understood they have agreed to work down the manganese to 70 per cent. I misunderstood your question. Will you please repeat it.

(The question was repeated, as follows:)

Have you made any other arrangements in regard to the grade of ore since the war began?

Mr. BURNETT. It will probably be necessary in some way to make 70 per cent manganese, but it would take a lower grade of manganese ore.

The CHAIRMAN. To make ferromanganese of the kind that you used before the war you had manganese ore running from 48 to 49 per cent.

Mr. BURNETT. To 50 per cent metallic manganese. That is the standard.

The CHAIRMAN. Now, to make manganese to the grade of, say, 70 per cent, what would be the grade of the manganese ore?

Mr. BURNETT. I think it would run about 45.

The CHAIRMAN. Do you know whether there is much manganese ore around that grade in this country?

Mr. BURNETT. There should be, according to the letters we get offering us manganese ore. They say they have manganese ore running from 45 to 50 per cent—any number of miners or prospective operators, but that is very hard to develop.

The CHAIRMAN. Your particular business is taking care of the purchasing of manganese ore for your company, is it not?

Mr. BURNETT. Yes, sir.

The CHAIRMAN. How do you purchase, directly from the producer or through some other agency?

Mr. BURNETT. We try to get it directly from the producer to the consumer, wherever possible. We make it a point to cut a middleman or broker wherever it is possible to be done.

The CHAIRMAN. You try, as far as possible, to deal with the producer?

Mr. BURNETT. Yes, sir.

The CHAIRMAN. Have you examined this bill, or do you know anything more about the bill before the committee?

Mr. BURNETT. I read over the synopsis in a pamphlet on the table there just a few minutes ago.

The CHAIRMAN. Did you read the clause relating to the licensing feature?

Mr. BURNETT. Yes, sir; I was very much interested in that clause.

The CHAIRMAN. Will you give us your opinion relative to the Government licensing these metals and ores?

Mr. BURNETT. I think it would be a good thing, inasmuch as when you receive a letter stating that this or that party has manganese ore, or chrome ore, or anything like that to sell, and he can show his license number, then you know he can stand investigating and he is a reliable party, and you know you are not wasting your time in corresponding with that party. It would be a wonderful help.

Senator JONES of New Mexico. What are you assuming as the conditions of the license?

Mr. BURNETT. That he really has the ore, and has the property and is operating it.

Senator JONES of New Mexico. Is there anything in this bill which requires that assurance on the issuance of a license?

Mr. BURNETT. I should think so.

Senator JONES of New Mexico. I wish you would point it out.

Mr. BURNETT. It mentions investigating by authorities before the license is issued, and I would imagine that would be a part of the conditions under which the license would be issued.

The CHAIRMAN. You understand that the bill does not require that the business be licensed but whenever the department administering the bill finds it essential to license, they have power to do it?

Mr. BURNETT. I understood that before a man could offer ferromanganese he would have to have his license to show that he was a producer of ferromanganese, and he would be a responsible party producing the ore. That was my understanding as I read the rough draft there.

The CHAIRMAN. And that that license would show the grade of ore that he was producing?

Mr. BURNETT. Not necessarily.

The CHAIRMAN. That he was a producer of manganese ore and was entitled under this license to mine it and sell it?

Mr. BURNETT. Yes, sir.

The CHAIRMAN. And by that process you feel it would assist you in the work that you are carrying on with this company?

Mr. BURNETT. It would be the greatest help in the world. We are thoroughly discouraged with the proposition at the present time.

Senator JONES of New Mexico. Why discouraged at the present time?

Mr. BURNETT. We have received these letters written in long hand; they are hard to decipher when we try to read them. We tell them that we are in the market for ferromanganese, and would like to have a certain tonnage, and what grade to ship, and we ask what would be the price f. o. b. mine, and we do not hear from them any more, or they will send along samples and we will analyze them for them, and we report the analysis, and that is the end of it.

As another instance, a party has got a certain tonnage and we have a lively correspondence for a month, and then it is all over and we find that his product has been sold. Of course, a license does not protect that part of it, but that is part of the reason why we are discouraged at the present time on the accumulation of tonnage of domestic ore.

Senator JONES of New Mexico. Have you any stable price for these ores which you offer to prospectors and producers?

Mr. BURNETT. We have not made any offers. We ask them what they want, and then sometimes they make some offer, so much a unit, sight draft against bill of lading, and that is very distasteful, that part of it.

Senator JONES of New Mexico. Are these prices offered about the same?

Mr. BURNETT. They run about the same; they seem to be about $1 a unit, which I believe we would be willing to pay for domestic manganese ore. That is a dollar a unit western mine.

Senator JONES of New Mexico. I think we have some evidence here of considerable complaint that you people who purchase these ores do everything possible to discourage the producer, in the way of failure to fix a price or give them any intimation of what you will take, and that you seem to be dealing in it as junk, taking whatever you can get.

Mr. BURNETT. That has not been my mental attitude, at least, but I do dislike to make a man an offer. I would much prefer that he would say what he wants for his ore.

Senator JONES of New Mexico. Do you not think that it is quite impossible to have any stable market among a number of producers if the purchaser is not willing to fix a stable price?

Mr. BURNETT. I might answer that in this way: I should think that the price should be regulated.

Senator JONES of New Mexico. You want the Government to tell you what you shall pay for your ore and what you shall sell it at?

Mr. BURNETT. I do not care so much about that as for the Government to say what the fellow will take for his ore, what he shall get for his ore. That means the same thing.

Senator JONES of New Mexico. That would mean that the Government would have to tell you what you should pay for your ore and what you should sell it at. Do you want your business regulated?

Mr. BURNETT. No, sir; we do not sell the ore; we have fixed a price on our product, as I understand it, our finished products.

Senator JONES of New Mexico. The Government has done that anyhow?

Mr. BURNETT. Yes, sir; they are rather fixed prices; it is not exactly the Government fixing, as I understand it, but we considered it such, and we lived up to it just as if the Government had made that sale.

The CHAIRMAN. It means the same?

Mr. BURNETT. It means the same to us. We are all law abiding, and it means the same to us.

The CHAIRMAN. In other words, where you sell your finished product your company now is controlled by an agreement between your company and some agency of the Government?

Mr. BURNETT. Yes, sir; we see in the daily papers the Government price—they call it the Government price.

The CHAIRMAN. Fixing the price of sale?

Mr. BURNETT. Yes, sir. There is, for instance, coal and coke. That has been fixed by law. There is a little difference in the program there, but it means all the same to us.

Senator JONES of New Mexico. Then, if the price of that product is fixed, you think it would be the right thing for the Government to fix the price which you should pay for raw material?

Mr. BURNETT. In the case of this manganese ore and chrome ore, at least, I would say so. As to other commodities it is not so essential. The other commodities are something that have been domestic industries for years, and you have your source of supply and the people that you have been doing business with for years, and your source of supply is coming—the law of supply and demand practically takes care of that; but here is something out of the ordinary altogether; something that has never been encouraged before the war and never been developed.

Senator JONES of New Mexico. What other raw materials do you use?

Mr. BURNETT. Chrome ore, limestone, coal—if you call that a raw material—sand, fluorspar, dolomite, and loam are the principal ones, and, of course, iron ore; that is the bigger.

Senator JONES of New Mexico. What is the situation relative to chrome? I understand you handle a great deal of that.

Mr. BURNETT. We do not handle so much of it, but it is very important for use in the manufacture of steel.

Senator JONES of New Mexico. Just what is its use; will you please explain?

Mr. BURNETT. Yes. For instance, we have basic open-hearth furnaces, and before the war, when there was plenty of chrome ore, we used chrome brick made of chrome ore, which is a neutral agent; in other words, it is neutral as between an acid and a basic lining. The bath of that furnace is basic, such as mangasite brick, for instance. Then the top of that furnace is reduced down on each. They use silica brick, which is satisfactory, and those come together. They use those chrome brick as a neutral agent between the two. When the chrome ore became scarce we discontinued the use of the chrome brick altogether, but we must have what we call a chrome patching. It is ground up and moistened up and is soft, and it is plastered along what they call the slag line to act as a neutral agent between the basic and the acid, and to do that they have been using about 225 tons a

month of this chrome ore, but now we are going to reduce our requirements, and as a matter of fact we have reduced them considerably and expect to get it down to about 100 tons a month by taking the slag, where they have made ferrochrome, or take this slag and fuse it; and while it is very high in slag, which is an acid and very detrimental to the basic lining, yet the slag, having been fused, makes it very refractory, and we take that slag and mix it with this very low-grade California chrome ore, which makes a very fine patching, and better than we have ever used when made of high-grade chrome ore, such as we get from Rhodesia or Greece and from New Caledonia. But there is some chrome ore that we must have, and we have eliminated the use of chrome brick.

The CHAIRMAN. Where do you get your chrome from now?

Mr. BURNETT. From California.

The CHAIRMAN. Have you been getting any by importation?

Mr. BURNETT. Not for, I should say, nearly two years. I have some due on a contract with E. J. Lavino & Co.—four hundred and some odd tons. That contract, I think, was placed in January, 1917, but I have never been able to get the balance of it.

The CHAIRMAN. Where does that chrome come from that you import?

Mr. BURNETT. From New Caledonia and Rhodesia, South Africa, and some from Greece.

The CHAIRMAN. Is that supply now entirely cut off?

Mr. BURNETT. Yes, sir; on account, I understand, of shipments.

The CHAIRMAN. And you are relying entirely on what chrome you can get from California at the present time?

Mr. BURNETT. Yes, sir; and, of course, the slag, but the chrome ore is what we are depending upon—the supply from California.

The CHAIRMAN. Is there much difference in the price of chrome now and the price before, when you were importing it?

Mr. BURNETT. Yes, sir; I had a contract with Lavino, I think, before the war at something like $13 a ton delivered at Lackawanna. I am now paying for California chrome ore $1.50 unit, which is $1.60 f. o. b. California points.

The CHAIRMAN. When you made an agreement with the Government to charge only a certain price for the manufactured article did you take into consideration the advance or increase in price for those ores that you used?

Mr. BURNETT. That is getting into a part of the business that I am not entirely familiar with. But I know they took our costs and all that this month, that month, and the other month, and bunched them together, and all that sort of thing.

The CHAIRMAN. They estimated it?

Mr. BURNETT. I can not say what they estimated, but they took out costs, I know that. I would not want to make any statement that I was not confident of. I do not know how they arrived at this price, but I know they took our costs for certain months.

The CHAIRMAN. Then, in your opinion, in order for you to successfully meet the requirements of the Government and fulfill your contract, there should be some governmental control of production and sale of three metals that you use in order to allow you a reasonable profit?

Mr. BURNETT. Yes, sir; the part of the reasonable profit comes under other departments; but what I want to get is the stuff—I want to get it and, of course just as cheaply as we can without having the appearance of bulldozing the producers or suppressing production and a fair price.

For instance, after we have paid $1.50 a unit on chrome ore that would make it necessary to the next time on an order pay $2 or have some one come along and offer them 75 for an ore that we have produced at $1.50. If you are interested in this matter, I might add that this ore that I am paying $1.50 for was originally gotten for 80 cents. We placed a contract for 80-cent ore which came in on a certified analysis analyzing 40 per cent and the analysis ran about 30 and we refused to pay for it on the basis of 40 per cent, and they quit the shipment. By the time we got that straightened out somebody else had taken the ore that was allotted to us, and to get the ore coming I sat back in my chair and said, "All right. I will pay you $1.50." Now, you can see what we are up against on that proposition.

The CHAIRMAN. Since the war began has the production in this country of chrome increased to any considerable extent?

Mr. BURNETT. Why, yes; before the war I never had purchased any chrome ore in the United States—mined in the United States—although I had purchased some produced in Canada, which was very poor; it was not satisfactory. They called it Black Lake in the Province of Quebec. It was never satisfactory.

The CHAIRMAN. Do you know what the production now is in this country of chrome?

Mr. BURNETT. I could not say.

The CHAIRMAN. But you are not getting enough to fill your needs at this time?

Mr. BURNETT. Yes, I am.

The CHAIRMAN. But partly through the slag that you are using, is it not?

Mr. BURNETT. Oh, yes, sir; partly. I think I can get more than I am getting now, because I am paying for it; but I want to give the other steel companies an opportunity also, so I am not taking any more than will take care of us.

The CHAIRMAN. The steel companies are cooperating in this matter, are they not?

Mr. BURNETT. I have not talked to any of them about it, but that is a sort of feeling within myself, that there is no use stocking it up and hogging it at this time.

Senator JONES of New Mexico. What is your finished product?

Mr. BURNETT. Rails, track accessories, structural shapes, bars, spikes, bolts, nuts, plate, and ammunition steels. That covers it.

Senator JONES of New Mexico. How are the prices of those materials as compared with the prices before the war?

Mr. BURNETT. The raw material?

Senator JONES of New Mexico. No; your finished product.

Mr. BURNETT. I could not say as to that. That is a sales department matter and I might make an incorrect statement on that.

Senator JONES of New Mexico. How do you know that you can afford to jump the price from 80 cents a unit up to $1.50?

Mr. BURNETT. Because we must be kept going, and at the end of the month, if the general manager tells me how much money they have made, if he is satisfied, then I am all right.

Senator JONES of New Mexico. When did you raise that price to $1.50?

Mr. BURNETT. Last month—some time in April.

Senator JONES of New Mexico. What was it before that?

Mr. BURNETT. Eighty cents.

Senator JONES of New Mexico. That was a pretty good jump, was it not, in one month?

Mr. BURNETT. It is a dandy jump. This fellow that I bought it of brought me a clipping of an advertisement in a California paper dated March 5, that the California Chrome Co. was offering $1.50 per unit for the 40 per cent ore for all they could get, and also said in that advertisement that they would be willing to pay even better than that; in other words, a bonus for the higher grade ore and prompt shipment. So what could I do? We had to make the steel for the United States Government.

The CHAIRMAN. How do you buy this chrome, direct from the producer?

Mr. BURNETT. This concern claims to have staked these producers, don't you know. They get a car here and two or three cars there. They claim that the owner finds that he had one or two cars of chrome ore, and then maybe he will find two or three cars more. For instance, this fellow told me that they would stake one man with $10,000, and get two cars of chrome ore.

The CHAIRMAN. Then you do not pay the producer direct, $1.50?

Mr. BURNETT. No, sir.

The CHAIRMAN. You pay some one else and he settles with the producer?

Mr. BURNETT. He settles with the producer.

The CHAIRMAN. And you do not know just what the producer did get in that case?

Mr. BURNETT. No, sir; I do not.

The CHAIRMAN. But you know that the man that you settled with got $1.50.

Mr. BURNETT. He is getting $1.50, and I am practically compelled to take their analysis. While they are certified analyses, such as a chemist would make, from my experience before they do not amount to an awful lot.

The CHAIRMAN. You have gotten chrome that was supposed to be of a certain grade, and you found that it did not come up to that grade?

Mr. BURNETT. Yes, sir.

The CHAIRMAN. And you had to take it anyhow?

Mr. BURNETT. Yes, sir; I had to pay something like $900 on three cars, and that is the reason we quit shipping. We would not stand for it.

The CHAIRMAN. In other words, you had to take what they shipped you regardless of the grade of ore?

Mr. BURNETT. That is practically it—they hand it to you gently.

The CHAIRMAN. But this transaction that you speak of was not with the producer himself?

Mr. BURNETT. No, sir; he calls himself a producer, but I do not call him a producer. He claims that he is a producer because he puts up money for those fellows in the mountains and gets out the ore for them.

The CHAIRMAN. And you feel that under the circumstances some governmental control is absolutely necessary in order to protect the industry?

Mr. BURNETT. Both ways, both producer and consumer. You will often find that the middle man gets it going and coming.

Senator JONES of New Mexico. Just tell us what you would have the Government do.

Mr. BURNETT. That is a pretty hard task. I would like to see it regulated. I would like to know what my chrome ore is going to cost, and would like to know that I am going to get a supply.

Senator JONES of New Mexico. How could the Government do that?

Mr. BURNETT. I think a big step would be taken under that license to the producer.

Senator JONES of New Mexico. The issuance of a license does not mean anything except in connection with regulations governing the issuance of the license, is not that it?

Mr. BURNETT. That is not my understanding. Under these other licenses that they have had to have to do business, you understand they pretty nearly had to toe the mark in order to get the license, and it would seem to me that before a man could get a license to ship chrome ore, that he would have to have chrome ore.

Senator JONES of New Mexico. In what way could the Government see to it that the man did have the chrome ore before he would offer it for sale?

Mr. BURNETT. I suppose they would have inspectors and investigators whose business it was to look up those fellows who had chrome ore, or who had made applications for chrome ore.

Senator JONES of New Mexico. That would be quite a job, would it not?

Mr. BURNETT. Well, it is a big job any way you want to look at it.

Senator JONES of New Mexico. I understand that, but would you suggest that the United States Government ought to have a man go around and inspect every prospect dump to find out the grade of the ore and how much the man had, and how much he could ship?

Mr. BURNETT. I think he would get discouraged, just as I have on manganese. I do not pay much attention to them any more. I have a file full of this stuff.

Senator JONES of New Mexico. Do you want the Government now to enter upon a discouraging proposition?

Mr. BURNETT. Of course, in my business there are a thousand other things to look after, but with an inspector on this matter that would be his business.

Senator JONES of New Mexico. Do you not think the Government has a thousand things to look after, too?

Mr. BURNETT. But the Government wants steel to win the war, and I want to give them the steel. Now, things may go along and I may get my chrome ore. I am not short of chrome ore yet. I may have to pay more than $1.50 a ton the next time I get it.

Senator JONES of New Mexico. What makes you think that?

Mr. BURNETT. When it was boosted from 80 cents to $1.50, then you can set yourself for anything. I have had offers since then at $1.80.

Senator JONES of New Mexico. Who boosted you from 80 cents to $1.50?

Mr. BURNETT. Mr. Chairman, am I at liberty to state that?

The CHAIRMAN. Yes.

Mr. BURNETT. L. H. Butcher & Co., of San Francisco.

Senator JONES of New Mexico. Who are they?

Mr. BURNETT. They are supposed to be the largest—I will call them distributors of chrome ore in California.

Senator JONES of New Mexico. Do you know the reason why that concern boosted the price from 80 cents to $1.50?

Mr. BURNETT. They notified us last December that they would ship no more ore on that contract if we were not going to pay according to their analysis.

Senator JONES of New Mexico. According to their analysis?

Mr. BURNETT. Yes, sir; their analysis, submitted with their documents.

Senator JONES of New Mexico. And your contract, then, was for 80 cents, using their analysis in order to get it?

Mr. BURNETT. The contract called for 40 per cent ore.

Senator JONES of New Mexico. At 80 cents?

Mr. BURNETT. At 80 cents.

Senator JONES of New Mexico. Then the dispute came up about the analysis of the ore which was shipped?

Mr. BURNETT. Yes, sir.

Senator JONES of New Mexico. And then what did you do?

Mr. BURNETT. When they said they were not going to ship any more we were pretty well supplied with ore and we did nothing about it until we needed some more ore.

Senator JONES of New Mexico. Then what did you do?

Mr. BURNETT. We asked them to come ahead and ship the rest of that ore.

Senator JONES of New Mexico. Who suggested the dollar-and-a-half price?

Mr. BURNETT. L. H. Butcher & Co.

Senator JONES of New Mexico. You told them to ship the ore then and they came back with a higher price, did they?

Mr. BURNETT. They came to see me and we talked it all over.

Senator JONES of New Mexico. What reason was given for the raise of that price from 80 cents to $1.50?

Mr. BURNETT. They claimed that the ore that they had set aside for us had been sold.

Senator JONES of New Mexico. Was that ore different from the other ore which they had on hand then?

Mr. BURNETT. I do not think so. He picked it up there wherever he could get a carload, it was claimed.

Senator JONES of New Mexico. What reason did he give for raising the price?

Mr. BURNETT. Because he could not get ore; that the California Chrome Co. had this advertisement out that they were willing to pay

$1.50 and he claimed that he could not get the chrome ore and turn around and sell it to us for 80 cents.

Senator JONES of New Mexico. Who is the California Chrome Co.?

Mr. BURNETT. I am not positive, but it is my opinion that it is the Electro Metallurgical Co., of Niagara Falls. At any rate, they pick up chrome ore for those people; that is my understanding.

Senator JONES of New Mexico. It is quite an important item, is it not, in your industry, this chrome ore?

Mr. BURNETT. Oh, yes, sir; as I have explained, although the tonnage is not great, comparatively. There are other larger tonnages of other raw materials.

Senator JONES of New Mexico. Well, a jump from 80 cents per unit made a difference of how much in a year's supply for your concern?

Mr. BURNETT. $4,000 or $5,000.

Senator JONES of New Mexico. Out of a total investment of how much?

Mr. BURNETT. The Lackawanna Steel Co. is capitalized for $33,000,000.

Senator JONES of New Mexico. I do not mean that the money is invested in this chrome ore.

Mr. BURNETT. You see, $1.50 units, or 40 per cent, $60 a ton, and $12 freight would be $72; 100 tons would be $7,200 a month, about $90,000 a year.

Senator JONES of New Mexico. How do you figure out the $5,000 you stated a while ago, the $4,000 or $5,000?

Mr. BURNETT. You said the difference between 80 cents——

Senator JONES of New Mexico. Yes.

Mr. BURNETT. And $1.50, did you not? That would be 70 cents unit, $80 a ton; that would be about $30,000, between $30,000 and $35,000.

Senator JONES. That is an item that can not very well be overlooked even by a $30,000,000 steel company, can it?

Mr. BURNETT. No; that is what we are complaining of.

Senator JONES of New Mexico. Then before you advanced the price, which would involve a direct loss of $30,000 a year, you must have gone into this question of supply pretty thoroughly, did you not?

Mr. BURNETT. I keep posted on those things, as we go along, from day to day, with the situation.

Senator JONES of New Mexico. Where do you get the supply of this ore?

Mr. BURNETT. In California and Oregon.

Senator JONES of New Mexico. Did you have to get any from Oregon?

Mr. BURNETT. I had an offering of $1.80 from an Oregon concern.

The CHAIRMAN. Was that the producer that gave you that quotation?

Mr. BURNETT. No; I think he was a broker.

Senator JONES of New Mexico. To what uses does this Niagara Falls Concern put this ore?

Mr. BURNETT. Ferrochrome.

Senator JONES of New Mexico. Making ferrochrome and selling that as its finished product?

Mr. BURNETT. That is, its finished product from the chrome ore; yes, sir.

Senator JONES of New Mexico. It does not use the ferrochrome in further manufacture, does it?

Mr. BURNETT. I think not. It goes into making steel, an alloy for making chrome steel.

Senator JONES of New Mexico. Then it sells the ferrochrome as an alloy to the steel manufacturers, is that it?

Mr. BURNETT. Yes, sir; making chrome steel.

Senator JONES of New Mexico. Whereas you make your own ferrochrome?

Mr. BURNETT. No; we use chrome as a refractory agent, for refractory purposes.

The CHAIRMAN. Taking up that licensing feature again, do you understand how the licensing feature of the Lever bill is operating under the Food Administration?

Mr. BURNETT. No.

The CHAIRMAN. Do you understand that the farmer who produces wheat is licensed?

Mr. BURNETT. No; I do not.

The CHAIRMAN. He is the producer, is he not?

Mr. BURNETT. I should say so; yes, sir.

The CHAIRMAN. Now, the miner who digs out the chrome would be the producer of the chrome, would he not?

Mr. BURNETT. Yes.

The CHAIRMAN. Take it in the case of wheat, this wheat passes through the flour mill and becomes flour, and then there are various stores all over the United States that sell flour. Now, those stores are licensed, are they not, and under their license they are allowed to sell flour, at the present time it must have a certain percentage of other stuff in it, you see?

Mr. BURNETT. Yes.

The CHAIRMAN. The licensing feature of this bill, do you understand, would affect the producer, or this broker or middle man from whom you buy?

Mr. BURNETT. The producer.

The CHAIRMAN. Why the producer?

Mr. BURNETT. Because it is a new industry altogether. It is not a parallel with the wheat raiser.

The CHAIRMAN. I understand that the agricultural industry in this country and the mining industry are quite different.

Mr. BURNETT. I mean in this way. We have men growing wheat for years and years, you know. This is something new altogether.

The CHAIRMAN. But do you not feel that whatever control the Government might take over would affect more the man that deals in this—the broker—than the real producer?

Mr. BURNETT. You see the license to producers, then we can deal with producers; we do not have to deal with brokers.

The CHAIRMAN. But if they license the broker the price could not shoot up like that?

Mr. BURNETT. Oh, no.

The CHAIRMAN. The Government could then regulate and prevent hoarding, prevent a broker saying, "I will not sell this unless I get my price."

Mr. BURNETT. In all lines I am for the producer strong; if there is any money to be made, let the producer get it, and when the consumer pays his money let him know the producer is going to get it.

The CHAIRMAN. Would not a license imposed upon the producer tend to discourage the production instead of encouraging it?

Mr. BURNETT. That is a big problem; I would not think so. All would depend on price, would it not?

The CHAIRMAN. Yes; to a certain extent.

Mr. BURNETT. Give him a fair credit for this.

Senator JONES of New Mexico. I can understand how you may not have a pleasant feeling for these brokers who have boosted the price from 80 cents to $1.50 in one jump; but now, suppose we are dealing there with the producers, what price would you fix on chrome ore?

Mr. BURNETT. That is a rather hard question to place before a purchasing agent, because he wants to get his stuff just as cheap as he can. That is his business.

Senator JONES of New Mexico. You are a large producer of metal, relatively speaking, are you not?

Mr. BURNETT. Yes.

Senator JONES of New Mexico. And I think we have got to look to you.

Mr. BURNETT. I tell you I paid $45 a ton for imported chrome before the war; I mean, not before the war, I mean during the war. My last contract for imported ore was $45, seaboard.

Senator SHAFROTH. When?

Mr. BURNETT. In January, 1917, and the freight rate is something like $2 up to Lackawana. I think these boys out in California got $1 a unit for their ore, and the steel companies did not complain.

The CHAIRMAN. You do not know what the producer is getting out of this $1.50 that you are paying, do you?

Mr. BURNETT. No; that bothers me, too, because I have had instances where I get caught in a pinch like this—it pinches all right or I would not pay $1.50 for the ore.

The CHAIRMAN. Now, if you are in the same pinch, would you not be willing to pay the producer the $1.50?

Mr. BURNETT. Absolutely. I would feel a great deal better if I knew the producer was getting this $1.50. He is the man who should have it.

The CHAIRMAN. Then that would encourage the production?

Mr. BURNETT. Absolutely; yes, sir.

Senator JONES of New Mexico. Now, then, would you have the Government guarantee to the producer $1.50 a unit?

Mr. BURNETT. Oh, that is a hard question. I think that is too high.

The CHAIRMAN. Would not that have to be determined largely by the administrator of this bill, whatever agency handled it, as to the supply and the demand for it?

Mr. BURNETT. To see it is taken care of: put a duty or some kind of tax on the importer, so as to protect the Government in case the war stops, and being booked, as we call it, for $1.50 more for a couple of years, and give us a chance to get out.

Senator JONES of New Mexico. Do you think if the Government would advertise abroad for all the chrome ore at $1.50 a unit that we would get enough in this country to supply the demand?

Mr. BURNETT. Yes; there is no question about that, if you have ships to bring it in.

Senator JONES of New Mexico. I mean in this country, without the ships.

Mr. BURNETT. I thought you meant the Government to advertise it in other countries.

Senator JONES of New Mexico. No; in this country.

Mr. BURNETT. Of course, I do not know how much chrome ore there is in this country. All I know is it is scarce right now.

Senator JONES of Mexico. All you know is you would like to have somebody supply you with chrome ore.

Mr. BURNETT. I think that in the estimate of the steel makers in general the problem of chrome ore, as far as I can see, is serious. It is needed, and their requirements should be protected, but I think whether they do that or not, I will get my chrome ore.

The CHAIRMAN. No matter what the price is?

Mr. BURNETT. I think so.

Senator JONES of New Mexico. We have what you call a very hard job. We are trying to work out this thing to determine just what ought to be done, and you are rather stumbling at the threshold of the inquiry.

Mr. BURNETT. How so?

Senator JONES of New Mexico. Because you do not undertake to tell us what price you would fix on this ore or just how you would handle it.

Mr. BURNETT. Well, I think before I could say that, I said I thought we would be willing to pay $1 a unit for the ore, but for me to estimate here and say that is enough to bring out all the chrome ore that is in California and Oregon, that would be out of the question for me to say that, because I have never been in either California or Oregon.

Senator JONES of New Mexico. Then, if you can not answer that question, if you have not that information, you are not prepared to say that the Government ought to guarantee the price of $1 a unit?

Mr. BURNETT. I did not say that. I said we would be willing to pay that, as we did pay that for the imported ore before shipments were shut off. That is what I base my conclusions on of what we will pay; $1 may be enough and may be too little; $1.50 may be right to bring out all there is, because at one time the California ore they were selling for $1.25.

Senator JONES of New Mexico. What do you know about the supply of chrome ore in the United States?

Mr. BURNETT. I read a long article on the train to New York, and in that article I gathered it was a very scarce commodity and it would be necessary to get out every ton that was available to keep this country going. I have that article there in my bag.

Senator JONES of New Mexico. That is the only information you have on the subject, is it?

Mr. BURNETT. And the general discussions with the chairman of the American Iron & Steel Industries on ferroalloys.

Senator JONES of New Mexico. But the only direct contact with the industry you have had has been buying from one or two of these brokers?

Mr. BURNETT. Yes; and at the time I wanted the chrome ore this last time I telegraphed California to the Union Chrome Co., another concern out there, for quotations, and I never had any reply at all. And as I say at that time I had another quotation from the Oregon brokers of $1 even.

The CHAIRMAN. I understood you to say that you also handled fluorspar?

Mr. BURNETT. Yes, sir.

The CHAIRMAN. Will you explain its use?

Mr. BURNETT. It is used in the open-hearth furnace as a flux to take away the impurities in what we call the bath when the steel is melted, when it becomes a molten mass.

The CHAIRMAN. Where do you get this material from?

Mr. BURNETT. The greater part of our supply comes from southern Illinois, around Golconda and Shawneetown; then we have and are still getting some imported fluorspar from England. There is fluorspar, of course, in Kentucky, but we have not had any Kentucky fluorspar for some time.

The CHAIRMAN. Were most of your requirements met by home production?

Mr. BURNETT. No; that reply is not quite right either. I think probably I could have skinned through on the domestic spar, but as a safeguard I did purchase the imported spar. You see the shipping conditions in that southern Illinois district in the winter are most uncertain on account of the conditions on the Ohio River. I believe that spar is loaded on barges somewhere down there and floated up to another point and loaded on cars, and they have had strikes and labor troubles and water in their mines, and one thing and another last year; they had an awful lot of trouble. Cars were scarce.

The CHAIRMAN. How much fluorspar do you use in your business?

Mr. BURNETT. About 7,200 tons a year, about 600 to 700 tons a month.

The CHAIRMAN. And there is nothing else that can take its place?

Mr. BURNETT. Nothing I can think of to take its place. I never heard of anything. On a big production and with limestone as a pig flux in an open-hearth furnace, where we use—well, at our open hearth we use probably 10,000 to 12,000 tons of limestone a month against another 600 to 700 tons of the fluorspar. It is a sweetener and added cleaner to your steel.

Senator JONES of New Mexico. What are you paying for your fluorspar?

Mr. BURNETT. I have one contract at $20 and one at $25 f. o. b. cars southern Illinois.

Senator JONES of New Mexico. According to the figures which I have before me here, that is considerably higher than it used to be.

Mr. BURNETT. One concern has just finished up a $7 contract, or is about to finish it, at least.

Senator JONES of New Mexico. Why are you paying $20?

Mr. BURNETT. Because I had to do it. It was necessary. I was obliged to do it.

The CHAIRMAN. Did you buy this direct from the producer?

Mr. BURNETT. Both of those producers are big producers down there and have their selling agents. The Rosiclaire Mine selling

agents are Rogers, Brown & Co., and the Fair View Mine is Hickman, Williams & Co., of Pittsburgh.

The CHAIRMAN. So you buy all you use through the selling agencies?

Mr. BURNETT. We buy all we use through the selling agencies; they are probably interested financially.

Senator JONES of New Mexico. How many sources of spar do you know of?

Mr. BURNETT. I only know of the three—that is, the Golconda, the Fair View, and Rosiclaire—in southern Illinois, and then miscellaneous odds and ends in Kansas. This concern in Kentucky on fluorspar is very similar to your chrome-ore producers in California.

The CHAIRMAN. What grade of fluorspar do you handle?

Mr. BURNETT. Eighty-five per cent calcium fluorspar and guaranteed 6 per cent silica. Silica is an acid reagent; I want to keep the acid out of our basic baths.

Senator JONES of New Mexico. How long have you been buying the imported spar?

Mr. BURNETT. Possibly a year.

Senator JONES of New Mexico. I notice that the quantity of spar imported is very slight compared with the domestic production.

Mr. BURNETT. I imagine so. You see the imported spar is a most inferior grade. None of us want to use it unless absolutely necessary.

The CHAIRMAN. Before the war you had the domestic production altogether, did you not?

Mr. BURNETT. Well, as a matter of fact, we have been sort of up against it on that fluorspar proposition off and on, even before the war.

The CHAIRMAN. I understood you to say you did not import any before the war, only within the last year.

Mr. BURNETT. I did not intend to convey that impression, but it is only since the war started that we have imported in any quantities at all worth mentioning, but we have off and on to protect our requirements; for instance, in the fall we would bring in a little lot of imported spar so as to have a little back log in the wintertime in case the Ohio River did not open in the spring just as soon as it should.

The CHAIRMAN. What did you pay for it in this country before the war?

Mr. BURNETT. They were always competitive. I bought domestic spar as low as $4.50.

The CHAIRMAN. Before the war?

Mr. BURNETT. Before the war at the mines; then, of course, your imported spar they try to put with it a product considered maybe a little under the domestic spar, because it is a little inferior in quality.

The CHAIRMAN. The last you bought you paid as high as $24?

Mr. BURNETT. What is that, the imported?

Senator JONES of New Mexico. No; the domestic.

Mr. BURNETT. $20 and $25 is my contract for this year.

Senator SHAFROTH. For domestic?

Mr. BURNETT. For domestic.

Senator JONES of New Mexico. Do you know what is the cause of that increased price? I have figures before me here which for 10 years

prior to 1917 show the price did not average over $6 a ton, and that it never went above $7.02, and that in 1916 it was selling for $5.92; 1915, at $5.15; 1914, at $5.99; and 1913, at $6.37. Now, what could have happened to that industry justifying the increase in price, say, from $6 a ton to $20, $25, or $30?

Mr. BURNETT. Well, of course, I do not know other than this, that they claim there has never been any money in the spar business on the prices they were getting. That Fairview concern is either now in the hands of a receiver or it has just recently gotten out after reorganization, and that the increased cost, and all that, and I suppose that one of the biggest features was they could get it.

Senator JONES of New Mexico. Through what process is that spar obtained?

Mr. BURNETT. In our domestic business we have split it always between Rosiclaire and Fairview and as they come to you and say other companies are now coming in buying their spar for next year, they say, "We have done business with you people. Now, we want to keep on doing business with you and the price is $20 a ton, or $25 a ton."

Senator JONES of New Mexico. What I am trying to get at is this: What do the people who sell you have to do in order to obtain this commodity; how is it produced?

Mr. BURNETT. It is mined.

Senator JONES of New Mexico. In a deep mine or how does it come?

Mr. BURNETT. I think those mines in southern Illinois are rather deep and the fluorspar is—that is not a by-product, I think they get some lead as a by-product?

The CHAIRMAN. Does it come in pockets or in veins?

Mr. BURNETT. I think in veins down there. This is just my impression, you know; I have never been there, and they tell about water in their mines, trouble about that, and all that sort of thing. Both of them, the Rosiclaire and the Fairview company, have the name "lead" in their concerns.

Senator JONES of New Mexico. Do you know of any reason which would justify their jumping the price up from $6 to $25?

Mr. BURNETT. I never did think the price was justified.

Senator JONES of New Mexico. I can't see how it would be if they had been running along at a comparatively uniform price for a long period of years prior to 1917, then all at once the price jumped from from less than $6 a ton up to $20, $25, and $30.

Mr. BURNETT. Of course, it is a question of demand and supply. Supply and demand have a lot to do with it.

The CHAIRMAN. Are you using more fluorspar now than before the war?

Mr. BURNETT. Yes; we have more open-hearth furnaces.

The CHAIRMAN. The demand is greater now than a few years ago?

Mr. BURNETT. Yes, sir.

The CHAIRMAN. That probably has helped to send the price up a little.

Mr. BURNETT. Supply and demand.

Senator JONES of New Mexico. There are practically, then, only two concerns supplying the market?

Mr. BURNETT. That is what I claim. Some of the producers in Kentucky may take exception to that statement.

Senator JONES of New Mexico. I wonder if you have any suspicion that there is practically only one concern supplying the market?

Mr. BURNETT. I could not say.

The CHAIRMAN. Do both concerns quote the same prices?

Mr. BURNETT. Oh, no; they might now. I got fooled; of course, I closed for $20 first. I said to myself, "Now, I will get the rest of what I need, one-half, you know, at a lower price." But this thing happened—I had to pay $25.

Senator JONES of New Mexico. For what period of time did you make a contract?

Mr. BURNETT. For one year, just as short as we can possibly make it. Of course, we get it going and coming. That $20 man has not started shipping on his $20 spar yet this year. He is still shipping $7 spar. He is practically through now on that contract.

Senator JONES of New Mexico. As far as this spar is concerned, instead of having a license system and price-fixing system and all that, here are only two dealers in this commodity, why would it not answer all legitimate purposes if we were to enact a law prohibiting the charging of unreasonable prices?

Mr. BURNETT. You would probably find me on these subjects somewhat prejudiced from the fact that I have been brought up in the mill and it is the greatest crime a mill man can commit to shut a mill down. Now, I have got fluorspar and my fluorspar is coming, it is not worrying me. My chrome ore was pretty shaky there for a minute, but I am all right now. When it comes to appear in the record before you a lot of the statements I will make will not be logical.

Senator JONES of New Mexico. They are logical as to your statement as to what your job is, to keep the mill running?

Mr. BURNETT. Yes.

Senator JONES of New Mexico. Perfectly logical.

Mr. BURNETT. Yes. That is my job, to keep that mill running, and when I shut the mill down—since I was that high I knew if I ever did anything to shut the mill down that that would be considered the worst crime a man could commit.

Senator SHAFROTH. I should like to ask the gentleman whether he has gone into the question of maximum price, minimum price, and this licensing system.

Mr. BURNETT. No.

Senator SHAFROTH. As I understand, the object of all this legislation is to increase production of these various metals?

Mr. BURNETT. Yes.

Senator SHAFROTH. And by reason of that it is thought the best thing to do would be to fix a minimum price at which the miner could rely upon, that under any circumstances he could get for his ore, and that seems to be the favored proposition by all persons. Now, in fixing the maximum price, which the House of Representatives struck out of the bill, it is claimed by many that fixing the maximum price would have a tendency to discourage production because if you should happen to fix the price too low, then it would be lower than the man could produce it for, and he would shut down. He could take the miner's chance on a low, a minimum price, but the chances are all

against him on the maximum price. Now, I should like for you to state your views as to which one of these theories is right, or if both are right, or if neither is right.

Mr. BURNETT. I think that the maximum price would be the real thing, after thorough investigation and knowing that that maximum price will not stifle production.

Senator SHAFROTH. What do you think about it stifling production unless you fix the maximum price pretty high? The maximum price, as I understand it, is that price which the man can sell for, and can sell for no higher price?

Mr. BURNETT. Yes.

Senator SHAFROTH. And it is a curb upon his profits. The minimum price is a guarantee that if he goes into the production he is sure to get, and can get, all above that that the operation of supply and demand will produce. It is also claimed that by fixing a minimum price and letting the law of supply and demand control the maximum price, that if large production of these metals occurs automatically they would be lower in price, and without any price fixing it automatically seeks a level which the market justifies under the principle of supply and demand. We have had an illustration in the wheat matter that has been somewhat disastrous. Wheat was fixed at $2 a bushel, and it was thought that it was a good price, but it seems that wages and all machinery by which farming is done have doubled, and the result has been it is a lower price than the market would demand for wheat. That is manifested by the fact that wheat to-day is cheaper than barley or rye or oats or corn, considering its strength and its feeding qualities, and on that account farmers to-day have been feeding animals that which brings the less price, namely, wheat, and have been selling their barley and rye and oats.

That very action of fixing a maximum price has had a tendency to increase the home production, home consumption of wheat, which, of course, makes less of a supply for our allies and for our own people, and at the same time it has not relieved people in respect of the substitutes, because the substitutes are a good deal higher in price than the wheat. Now, that mix up makes Congress feel that they should better not fix maximum prices, but let supply and demand control it, just like it controls cotton, where there is no maximum or minimum price. What I would like to know from you is, What is your view on whether there should be such a thing as a maximum price fixed at all?

Mr. BURNETT. I still claim there should be a maximum price fixed, because you do not know how much more of that chrome ore there is to be gotten out. Suppose you get out all there is to be had, and then you have not enough; take grains and other products like that. You have got figures to show how much can be raised, and take a coal mine—and you have got so many acres—you measure the vein; it is 6 feet; you know how much coal there is there, but on that chrome ore you do not know.

The CHAIRMAN. Mr. Burnett, right there take the case of wheat. You have substitutes for wheat, such as corn to make corn bread, and when the price of wheat was fixed and they would not sell it, say the price of corn and other commodities of that kind sought a higher price then because the demand was greater. Now, have you

anything in the market that could take the place of chrome for the uses that you put it to?

Mr. BURNETT. We have not.

The CHAIRMAN. In other words, if we do not use wheat, we might use some of these other commodities which could take the place of wheat; but in the market to-day you have nothing that can take the place of chrome, have you?

Mr. BURNETT. No.

The CHAIRMAN. You have nothing that can take the place of fluorspar?

Mr. BURNETT. No.

Senator SHAFROTH. Do you believe there is any monopoly in chrome, any combination in restraint of trade?

Mr. BURNETT. Not that I know of.

Senator SHAFROTH. Well, what price do you think ought to be fixed on chrome?

Mr. BURNETT. I said we should, to be consistent, be willing to pay a——

Senator SHAFROTH. But would you say the Government should fix a price that nobody should sell chrome for any greater price than is fixed?

Mr. BURNETT. I could not say that, because I do not know what it would cost to get it out.

Senator SHAFROTH. If you fixed a maximum price that would be the result, would it not?

Mr. BURNETT. Of course, somebody, whoever fixes that price, must know what he is fixing it on.

Senator SHAFROTH. If you happen to fix it too low then it limits production, does it not?

Mr. BURNETT. There is a chance of a mistake, I suppose, just the same as in anything else.

Senator SHAFROTH. Suppose they should fix a price at $1 and it could not be produced at $1, considering the fact there have been increases and difficulties and high prices on everything else, and labor, and the result of that would be that it would discourage production, would it not?

Mr. BURNETT. I presume that would be detected right away and you could raise it.

Senator SHAFROTH. I suppose the object of limiting the amount by a maximum price would be to prevent excess profits. That could be the only object. Supply and demand in everything else, in the ordinary transactions of business——

Mr. BURNETT. It helps in this way. You are not bidding against the other fellow; you are not bidding against each other, while of course we all want to save all the money we can for the country; but when it comes in these war times and we are trying to get out steel, we are not going to quibble over a cent and are not going to be stingy. The first thing you know I buy a tonnage of ore and somebody else comes along and buys the same ore. Why? Because he offers 25 per cent more than I agree to pay, because the other fellow is willing to take what I agree to pay.

Senator SHAFROTH. You would not want that to apply to your industry, would you, if you could get 25 cents a hundred more?

Mr. BURNETT. I think you will find they are along different lines altogether—they are a different class of people in the business.

Senator SHAFROTH. As a matter of fact is not that the object of fixing a maximum price, so that the market will not run away, as you term it?

Mr. BURNETT. Yes; to stop a run-away market.

Senator SHAFROTH. And that run-away market is due to the fact that parties desire to make excess profits, is it not?

Mr. BURNETT. I suppose it is from a desire, a sales manager's desire, to get just as much as he can on his products and the purchasing agent wishes to buy just as cheap as he can. Competition, that is what it is.

Senator SHAFROTH. As a matter of fact, can you not catch the excess profits better by an excess-profits tax that makes one man yield up 60 or 70 per cent of his profits, if they are very high, and will not that have a tendency to curb, and if it does not curb, turn into the Treasury of the United States for war purposes a pretty big fund?

Mr. BURNETT. I do not know. I am purchasing agent for a steel company. You are getting pretty deep for me.

Senator SHAFROTH. It does seem to me that when you interfere with supply and demand you are getting into very deep water.

Mr. BURNETT. Yes. There is lots of argument on that line.

The CHAIRMAN. Can the Lackawanna Co. produce their own supply of these ores?

Mr. BURNETT. No.

The CHAIRMAN. Why not?

Mr. BURNETT. They own only iron-ore mines.

The CHAIRMAN. They have to rely upon the market, then, for the other products that they need to produce the manufactured article?

Mr. BURNETT. Yes. Our requirements would not warrant investments in a chrome-ore proposition, or a fluospar proposition.

The CHAIRMAN. What ore is it that could take the place of manganese to-day?

Mr. BURNETT. I do not just exactly understand that question. I do not think there would be any ore.

The CHAIRMAN. It is the same as chrome and fluorspar—nothing can take the place of those two?

Mr. BURNETT. No; absolutely. You get manganese ore and it is either high in manganese or low in manganese. You must make your ferromanganese.

The CHAIRMAN. And you have to have your manganese ore to do that?

Mr. BURNETT. Yes.

Senator SHAFROTH. Is it your theory there should be no such thing as a licensing system by which a license for buying ores can be revoked? There is a provision in the bill that provides for a licensing system; that is, for those people who deal in and who buy ores, and unless they obey the orders of the powers that be why, then, the license to deal in those things can be revoked. Do you think that wise?

Mr. BURNETT. Oh, yes; that is all right. I am in favor of that licensing proposition, as I have stated.

Senator SHAFROTH. You think your steel company ought to be subject to a licensing system?

Mr. BURNETT. Yes; it is not. We would be very glad to have it licensed. As a matter of fact, I think it is a good scheme, and whatever rules are laid down we will abide by them, as we do on all, license or no license.

Senator SHAFROTH. Do you think that if the department were to require that you should pay more for this product than you could buy it in the open market, do you think that would be right?

Mr. BURNETT. You make your maximum prices; if I could buy it better than the maximum prices all well and good. Is that not right?

Senator SHAFROTH. No; the maximum price is that he shall sell for a certain amount.

Mr. BURNETT. As I understood, all maximum prices that have been fixed mean that you can buy it better than that; if you can, all well and good.

The CHAIRMAN. Not to exceed a certain amount?

Mr. BURNETT. Yes.

Senator SHAFROTH. And the minimum price is the other way. Now, of course, being a dealer in the finished product after it is produced, you would like to have the advantage of buying at anything less than the maximum price?

Mr. BURNETT. Oh, yes; I will always buy less than the maximum price if it is possible to do so.

Senator SHAFROTH. But how about the producer? He wants to have the privilege of selling for more than the maximum price if the market justifies it.

Mr. BURNETT. You will have to employ a neutral agent, I guess.

Senator SHAFROTH. Those are the two contentions between the two.

Mr. BURNETT. Competition will control it all the way through.

Senator SHAFROTH. It is a stifling of competition, it seems to me.

Senator POINDEXTER. If Mr. Macbeth may be permitted, I should like him to get some information from Mr. Burnett in regard to chrome and magnesite, if he can ask a question or two.

The CHAIRMAN. Certainly.

Mr. MACBETH. Mr. Burnett has stated that his company uses chrome ores, manganese, and fluorspar. Does not your company use a large quantity of magnesite ore, Mr. Burnett?

Mr. BURNETT. We use what is considered a fair tonnage of magnesite, or did before the war, possibly 400 to 500 tons a month. Magnesite, you know, became very scarce and we had already put in some rotary calcining kilns; we were going to calcine by limestone to use as a flux in our tilting furnaces, so when magnesite became so very scarce we started to burn dolomite, calcine dolomite, treat it as, use it as, a substitute for magnesite; so now our magnesite requirements are kept very low indeed, except when it is necessary to make a new bloom, make a basic bloom for the open-hearth furnace, then it requires about 100 to 110 pounds of magnesite to make a bloom.

Mr. MACBETH. You have no difficulty at this time in obtaining magnesite, have you?

Mr. BURNETT. Magnesite is quite plentiful. The price has recently been reduced.

Mr. MACBETH. You could meet any requirements, practically, that you require?

Mr. BURNETT. Yes; I could get 600 tons a month if we needed it.

Mr. MACBETH. You stated that the price in California of chrome ores was apt to be excessive. Are you aware of this fact, Mr. Burnett, that the deposits of chrome ores in California that have heretofore been mined have been near to the railroads, and that now in order to obtain chrome ores it is necessary to go some distance from the railroads, which entails an increased cost of haulage and also mining, a legitimate increase in the expense due to the facts I have mentioned?

Mr. BURNETT. Doubtless a lot of it is legitimate—real cost and labor, and all that.

Mr. MACBETH. Are you aware of the deposits in eastern Oregon of chrome ores?

Mr. BURNETT. All I know about that is I have seen some of our bills of lading are dated in Oregon. That is all I know about it. I have never been in Oregon or in California.

Mr. MACBETH. Do you purchase any ore from the chrome concern that is headed by Mr. Price?

Mr. BURNETT. We buy the chrome slag from Mr. Price's concern, which I know of as the Electro-Metallurgical Co., and he may be interested in that chrome company in California. Whether he is or not I do not know.

Mr. MACBETH. Mr. Price has a mine in eastern Oregon that is at present producing about 1,000 tons a month.

Mr. BURNETT. Are they concentrating it there?

Mr. MACBETH. No; I think he is shipping the crude ore. There are a number of deposits there, one in particular owned by D. J. Sullivan and his associates.

Senator POINDEXTER. Where are they?

Mr. MACBETH. In eastern Oregon.

Senator POINDEXTER. Whereabouts in eastern Oregon?

Mr. MACBETH. I would say about 15 miles at a town called Homestake or Homedeal, at the end of the Oregon Short Line Railroad.

I have samples of Sullivan's deposit, and Sullivan's ore will run about 38 per cent.

Mr. BURNETT. That is a fair grade of ore, chrome ore, as it goes, if his silica is not excessive.

Mr. MACBETH. One other question, Mr. Burnett. What is the tonnage in steel of the Lackawanna Co. per annum, approximately, in which the use of chrome ore enters?

Mr. BURNETT. That goes into the open-hearth steel only—it does not go into the Bessemers—1,500,000 tons of ingots.

Mr. MACBETH. The increased cost of chrome ore per annum, taking your statement, is $33,600, and your tonnage production is 1,500,000 tons?

Mr. BURNETT. Yes, sir.

Mr. MACBETH. It is somewhat inconsequential as a matter of cost, is it not?

Mr. BURNETT. Yes; but that is a dangerous way to look at anything like that.

Mr. MACBETH. I am looking at it from the standpoint of the western mill.

Mr. BURNETT. In my business I always deal with the smallest unit, because when you saved $5 on a million dollar purchase, if you look at your million dollars it is not a lot, but just keep your mind centered on the $5, and it is considerable.

Mr. MACBETH. How far have you met your chrome-ore requirements?

Mr. BURNETT. I feel I am covered for the rest of this year.

Mr. MACBETH. And you feel no anxiety about it?

Mr. BURNETT. No; I am very restful on that subject.

Senator POINDEXTER. You know of no reason why the Government should interfere in the way of regulation or price fixing, either a minimum or maximum price as to magnesite?

Mr. BURNETT. I did feel that way for a while, but those fellows are reducing their prices right along on magnesite.

Senator POINDEXTER. As a matter of fact there is an ample supply in the matter both of production and price, and it seems to be taking care of itself, does it not?

Mr. BURNETT. Whether that is the influence or not is pretty hard to say. They went ahead pretty strong on that magnesite proposition, and a great many of the companies, like ourselves, have gotten into this calcining proposition and cut out this magnesite. We will never again use the tonnage of magnesite we did before the war, and there has been something that has been working down the price of that magnesite; it dropped last month $75—something like that—a ton. Magnesite brick has dropped too.

The CHAIRMAN. Are there any other ores mentioned in this bill that you handle besides the ones you have already referred to?

Mr. BURNETT. No, sir.

## STATEMENT OF DR. G. D. WATERHOUSE, METALLURGIST OF THE LACKAWANNA STEEL CO.

Mr. WATERHOUSE. Mr. Chairman and gentlemen, anything I say you will understand is from the standpoint of the man in the mill and that is using the materials that our purchasing agent supplies us with. There is one point that has not, perhaps, been brought out as it should, in Mr. Burnett's testimony, and that is that in the mills we are making every effort to use manganese alloys from the domestic ores. Mr. Burnett has not mentioned, nor have you brought out the fact that we use a very large tonnage of the manganese, also called spiegeleisen; that alloy has run from 19 to 21 per cent in metallic manganese. It is a great deal lower than this 80 per cent ferromanganese. Our company has been for a very large number of years one of the pioneers in using this low grade alloy. Other plants will use the low-grade alloy to make their steels, but we use this low-grade alloy to make a very, very large tonnage of steel, indeed. For instance, all our rails, all our shell steel, every steel we make above the 35 per cent is made with this low-grade alloy. With perhaps that exception I do not think there is any point which has not been covered by Mr. Burnett.

Senator JONES of New Mexico. Could the other concerns use the same material that you use?

Mr. WATERHOUSE. It would be, perhaps, a hardship on the smaller concerns. This alloy can only be used where you have a comparatively large tonnage of these steels to make. By that I mean you have one heat following another of these grades of steel, because this low-grade alloy has to be melted itself; the higher-grade alloy we throw into the ladle cool, but this low-grade alloy has to be used in such an amount that it has to be melted first. The larger steel concerns get orders in large enough amounts to make heat after heat of these grades of steel, so they can afford to put in the equipment to melt this lower-grade alloy. The larger companies could do it without any great hardship, the smaller companies, however, making only comparatively few heats of steel, if they attempted to use this alloy it would be a hardship for them.

Senator JONES of New Mexico. To what extent do you think the requirements for manganese could be reduced provided the steel concerns should use this lower grade in the way that you speak of?

Mr. WATERHOUSE. I could not say, Senator. You see, that would require going into the figures of production of the various grades of steel, but that matter has been gone into very carefully by the ferroalloy committee of the Iron and Steel Institute, and all of the companies have filled out questionnaires, so a simple request of that committee will get just the information you want, because I know every company has had those questionnaires and has sent in a return.

Senator JONES of New Mexico. Tell us about this institute and what work does it undertake?

Mr. WATERHOUSE. This institute is modeled on the Iron and Steel Institute of Great Britain, and it is called the American Iron and Steel Institute. It is composed of steel makers and steel users. I do not know just the proportion of those two that make up the body of members. I presume the majority is composed of the iron and steel makers. We hold three meetings a year, one in May, which is in New York, and one in October, which is in some other city, an iron and steel producing center, or a prominent iron and steel using center, and at those meetings we take up matters dealing largely with the manufacture of iron and steel, things to help us in our technical work, different methods of making iron, different methods of rolling steel, the improvements in practice we have worked out at the different plants.

Senator JONES of New Mexico. Is there any one connected with that institute whose business it is to look into the uses and the supply of manganese, or any of these ores that we have been talking about?

Mr. WATERHOUSE. Until the war started it was not, but since the war started they have organized in that institute a number of committees. It is the business of this particular committee, the ferroalloy committee, to do just that work you have mentioned, to find out where the supplies can be obtained, to find out the needs of the different producers.

Senator JONES of New Mexico. Who has charge of the work of that committee?

Mr. WATERHOUSE. I think Mr. Farrell is the chairman, and I know our president, Mr. Clarke, is vice chairman, and at a meeting we recently held he was the acting chairman of that meeting.

Senator JONES of New Mexico. It occurs to me that one or the other of those gentlemen ought to be able to give us broader information than Mr. Burnett has been able to give regarding these matters?

Mr. WATERHOUSE. Yes; they can give you information dealing with the whole.

The CHAIRMAN. I will state that Mr. Farrell will probably be here Thursday.

Mr. WATERHOUSE. There is a man called Horton or Norton, connected with the Rogers-Brown Co., that Mr. Burnett mentioned as handling fluorspar, who is the secretary of that committee. If it will help you, Senator, I will get that information and send it to you or to Senator Jones.

Senator JONES of New Mexico. We shall be glad to get it.

Mr. MUDD. May I speak a moment?

The CHAIRMAN. Certainly.

Mr. MUDD. I was going to ask if Dr. Waterhouse could bring out the importance of the use of the low-grade alloy which is called speigeleisen. Spelter could be made of low-grade manganese ores, of which there is a very much larger supply in this country than of the higher grade ores. If the steel companies can accommodate their practice and use for spelter the demand for high-grade manganese ores, which are needed in the manufacture of ferromanganese, the high-grade alloy, would be thereby decreased. Can you bring that out, Mr. Waterhouse.

Mr. WATERHOUSE. Of course, what this gentleman has said is true, but you must not overlook the fact that for all grade of steel below 35 per cent, all grades below that per cent of carbon, you will need the higher percentage of alloy. That is the practice up to the present time. If we have absolute need we can perhaps work out a practice to make steels a little lower in carbon than that amount. Now, the steel below that percentage in carbon, constitute a very great tonnage, all the structural steel that we make, he buildings, all the plate we use for ships, tanks, and cars, and practically all the machine bars come in that classification, below this percentage, so there would still remain a very large demand for the higher-grade alloy. This gentleman is perfectly correct, that the more you can bring about the use of the low-grade alloy by so much the more can we use the ores we have in this country and reduce the demand for this high-grade ore.

Senator JONES of New Mexico. But as you lower the grade of the alloy you increase the carbon in the product?

Mr. WATERHOUSE. Yes, sir; that is just it.

Dr. SMITH. Mr. Chairman, it possibly could be brought out also to what extent the Lackawanna company has changed their practice in this respect since the war began.

Mr. WATERHOUSE. We have hardly changed our practice at all. As I said, for a number of years we have been working on that line, to use this low-grade manganese alloy, this spiegeleisen.

Dr. SMITH. Where does this spiegeleisen come from?

Mr. WATERHOUSE. Mr. Burnett can answer better, but I believe the majority of it comes from the New Jersey Zinc Co.

Mr. BURNETT. That is correct.

Mr. WATERHOUSE. The zinc ore of the New Jersey concern contains manganese alloy and by a method of concentration they get the zinc part of it in one part of their product and their manganese in another.

Senator POINDEXTER. Where is their mine?

Mr. WATERHOUSE. Franklin, N. J.

Senator POINDEXTER. Their mines are there?

Mr. WATERHOUSE. Yes.

Dr. SMITH. I just want to call attention of the committee to the fact, Dr. Waterhouse, that this manganifferous zinc ore which produces the spiegeleisen which is used by the Lackawanna company does not involve any of the high-grade ores from the West that we have been considering here in the committee.

Mr. WATERHOUSE. None at all.

Dr. SMITH. So that is a supplementary source of manganese?

Mr. WATERHOUSE. And perhaps we have not stressed enough the point this gentleman brought out that there are very large supplies of what we have called low-grade manganese ores that can be used for making spiegeleisen.

Dr. SMITH. In Colorado that practice has been used as well.

Mr. BURNETT. On the Great Lakes, too, in Illinois and Minnesota.

Dr. SMITH. I mean the Colorado Fuel & Iron Co. has used a large per cent of low grades.

Mr. WATERHOUSE. The Colorado Fuel & Iron Co. have ores available from which they make spiegeleisen running 35 and 40 per cent, which you see is intermediate between this 20 per cent and 80 per cent; but I understand they use nothing else but that 30 to 40 per cent.

Senator POINDEXTER. What is it you propose, or do you propose anything in the way of legislation to apply to the existing situation?

Mr. WATERHOUSE. I have not even thought of that question, Senator.

Senator POINDEXTER. Do you know of anything that is needed to be done, or have you thought out any program for increasing the production of spelter?

Mr. WATERHOUSE. The steel people voluntarily have taken the attitude that they will increase the use of this low grade, also the spiegeleisen.

Senator POINDEXTER. They are willing to pay a working price for it, I suppose?

Mr. WATERHOUSE. Yes; and they are willing to alter their practice as far as they can to use it. It might be well to wait and see what results they have before you go to legislation to enforce anything of that kind.

Senator POINDEXTER. Do you manufacture high-grade steels, such as are used in tools and armor plate for ships?

Mr. WATERHOUSE. For most of those purposes, the high-grade steels, they will need higher-grade alloy.

Senator POINDEXTER. What other alloy can they use for making those higher-grade steels?

Mr. WATERHOUSE. There they have all these ferro-alloys; for instance, in armor plate they use ferrochrome, in the tool steels they have the other ferro-alloys—the ferrotungsten, the ferrogranatite, and even rarer ferros than that.

Senator POINDEXTER. Are you familiar with the sources of supply and the available quantities of those other alloys?

Mr. WATERHOUSE. Our steel company makes none of those special steels, so I am not familiar with them.

Senator POINDEXTER. Do you have any difficulty now in getting all the manganese that you need?

Mr. WATERHOUSE. No, sir; thanks to Mr. Burnett, we have been taken care of.

Senator POINDEXTER. You have a reserve stock, I understand, that he has referred to that he has already secured?

Mr. WATERHOUSE. Already secured; yes, sir.

Senator POINDEXTER. But it would not in any way affect the question of current supplies, people that were not already stocked up with it?

Mr. WATERHOUSE. No; it would not.

Dr. SMITH. I think it might be well to put in the record the relative requirements of the Lackawanna company regarding the ferros, the higher grades and spelter.

Mr. BURNETT. Spelter manganese will run between 700 and 800 tons a month; the spiegeleisen, the requirements depend entirely upon the rail tonnage we get out. We figure that between 3,000 and 3,500 tons a month would be our requirements on spiegeleisen.

The CHAIRMAN. I think that is all, unless you have some other point you wish to bring out.

Mr. WATERHOUSE. I will take care to send you that information regarding the ferro-alloys, and I do not know of anything else.

The CHAIRMAN. We should be glad to have that, and we are much obliged to you gentlemen for appearing before the committee.

(Whereupon, at 12.15 o'clock a. m., the committee adjourned until Tuesday, May 14, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

TUESDAY, MAY 14, 1918.

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The hearing was resumed at 10.15 o'clock a. m. pursuant to adjournment, Senator Charles B. Henderson (chairman) presiding.

## STATEMENT OF MR. R. M. RICE, REPRESENTING THE LA BELLE IRON WORKS.

The CHAIRMAN. Mr. Rice, where do you live?

Mr. RICE. I am located at Steubenville, Ohio, but I live in Wheeling, W. Va.

The CHAIRMAN. What company, if any, do you represent?

Mr. RICE. The La Belle Iron Works, of Steubenville, Ohio.

The CHAIRMAN. In what capacity do you represent the La Belle Iron Works?

Mr. RICE. As purchasing agent.

The CHAIRMAN. How long have you been purchasing agent of the La Belle Iron Works?

Mr. RICE. Twelve years last March.

The CHAIRMAN. What business is this company engaged in?

Mr. RICE. It is engaged in the manufacture of pig iron, billets, slabs, ship plates, sheets, nails, etc.

The CHAIRMAN. Have you examined the list of metals and ores now under consideration by this committee?

Mr. RICE. I have noticed them this morning; yes, sir.

The CHAIRMAN. Does your company handle chrome ores?

Mr. RICE. We use chrome ores.

The CHAIRMAN. You are purchasing agent, I understood you to say, of this company?

Mr. RICE. Yes, sir.

The CHAIRMAN. Where have you been getting your chrome ore?

Mr. RICE. Up to the beginning of the war we used largely imported chrome ores, such as Turkish, Japanese, African, Australian, Grecian, and possibly about two years before 1914 or about 1912 we did get some ore out of Canada; that is, Canadian chrome ore.

Senator STERLING. What is included in that term "chrome ore"?

Mr. RICE. I did not catch your question.

Senator STERLING. I asked you what was included in the term "chrome ore."

Mr. RICE. It is chrome ore in the raw state. It is in the state in which we get it, in lump form, and it has to be ground up for our purposes. It is in its natural state, as it comes from the deposits.

Senator STERLING. What is its quality? What is it used for?

Mr. RICE. We use it as a refractory. We grind it up and use it in the slide line in the open-hearth furnaces. It is a sort of a wash around the slide line. We do not use a great quantity of it. In 1917 we used about 904 net tons, or 75 tons per month. However, it is very necessary to have it.

The CHAIRMAN. Is there anything that can take its place?

Mr. RICE. Not that we know of; no, sir.

The CHAIRMAN. Where did you get chrome ores in 1917?

Mr. RICE. In 1917, altogether, with the exception of about 400 tons that we got from E. J. Lanino, at Philadelphia, which was Australian ore, all our supply came from Canada, and our supply now is coming from Canada, from the Black Lake district, Quebec.

Senator STERLING. It is found within the borders of the United States?

Mr. RICE. It is; yes sir. We have had chrome ore offered us from the West, from California, and I believe from Washington. California, I am sure about. But only recently has that been offered. We have had large connections in the Black Lake district in Canada for quite a long time back. That ore we can buy cheaper than we can the California ore, on account of the freight rate. Besides, our friends from the West, it seems to me, are asking too high a price for their product.

The CHAIRMAN. What do they ask for the chrome ore in California?

Mr. RICE. You heard Mr. Burnett yesterday. He possibly is more familiar with it than I, for the reason he has been buying where we have been only inquiring about it. He mentioned $1.50 per unit.

The CHAIRMAN. What do you pay for it in Canada?

Mr. RICE. We are now paying $1.30 and $1.33.

The CHAIRMAN. Is that laid down at your plant?

Mr. RICE. Sir?

The CHAIRMAN. Is that the price for delivery at your plant?

Mr. RICE. No, sir. We have a freight rate of $4.08. It is very close to that now.

The CHAIRMAN. This is the price that you pay in Canada?

Mr. RICE. Yes, sir.

The CHAIRMAN. And then you pay the freight to your plant?

Mr. RICE. Yes, sir.

Senator STERLING. You said so much per unit. What do you mean by that?

Mr. RICE. I mean the chrome content. We buy the material. The Canadian chrome ore is rather lean, but we are not large users of chrome ore. However, we rather insist upon having the higher percentage. We like it to run as near 40 per cent as possible. Over a period of years we tried to use from 35 to 40 per cent in chrome ore contents. Not being large users, and by sort of trading around, we are able to get that percentage in a large degree.

I might just mention the fact that the price of Imperial chrome—that is, from African ore—before the war was around $14.30. We have a record of having paid $14.30 a ton delivered at Steubenville, Ohio. The Grecian chrome ore is $14.28 a ton.

Senator STERLING. How much would that be per unit in these ores?

Mr. RICE. About 36 cents a unit, whereas we are paying for the Canadian ore, as I have just mentioned, around $40 a ton for 30 per cent ore, or about $1.33 a unit now. If my memory serves me correctly, we have had much higher prices quoted us on the California ore, and I believe they mine some in Washington, too, do they not?

The CHAIRMAN. In the Northwest, in Oregon and Washington.

Mr. RICE. We have had much higher prices quoted us than Mr. Burnett mentioned yesterday, but he is a buyer, while we have only been looking around as yet.

The CHAIRMAN. That is, you have been looking around in the United States?

Mr. RICE. Yes. It has only been recently that it has been offered to us.

The CHAIRMAN. Do you buy direct from the producer?

Mr. RICE. No, sir. We buy our Canadian chrome ore through Frank Samuel, Harrison Building, Philadelphia, and have for years. He is in very close touch with the operations up there and ships more ore out of there, without question, I think, than any other broker in the United States. He has a hold of the situation up there such as we could not get. It is mined by the French Canadians, and, as I understand it, the labor situation is never a good one. He is in a position to deal with these people better than we are. They are very unreliable. I mean the mining element. So we have bought from him direct.

The CHAIRMAN. Is that the same way that you bought the ores from foreign countries?

Mr. RICE. As you know, Senator, there are hardly any of those imported ores that are bought direct. They are nearly all bought through importers of this country, like Lavino, or Crocker Brothers, of New York, or Frank Samuel, of Philadelphia. Nearly all of that is handled through importers.

Senator STERLING. Do you know the conditions under which it is mined in Canada, or in this country, as, for example, the depth beneath the surface to which they have to go in mining it?

Mr. RICE. Really, I have been told, but I do not remember, sir. I am sorry that I can not tell you. I think it is found largely in pockets, some of them bearing a very good grade of ore and some of them a very lean grade. Of course, I suppose it would be about the same as we find in a part of our own country.

The CHAIRMAN. Your company also uses fluorspar, does it not?

Mr. RICE. Yes, sir; we do.

The CHAIRMAN. Where do you get this material from?

Mr. RICE. From southern Illinois and Kentucky. Our position in that respect is just a little bit different from that mentioned on yesterday. We used in the year 1917, 3,264 net tons, or 272 tons a month. The greater part of that came from southern Illinois. The Rosiclaire Fluorspar and Lead Co., of which the John R. McLean estate, of Washington and Cincinnati, is the owner, is the source of supply. Our source of supply has been largely from that point over a great many years, but we also buy fluorspar from Kentucky, and during this past winter we got quite a nice tonnage from Colorado.

Senator SHAFROTH. Do you know whether that tonnage is obtained by working over the dumps of Leadville?

Mr. RICE. The shipping point was Wagon Wheel Gap, wherever that might be.

Senator SHAFROTH. That is in the southern part of the State.

Mr. RICE. I have seen the spar myself and inspected it and it was a good grade of spar. It will average up with that produced in other parts of the country.

Senator SHAFROTH. Do you know whether it was mined there or whether it was obtained from the old dumps?

Mr. RICE. I think it was mined there.

Dr. SMITH. That was mined as fluorspar. A fluorspar mine was developed there several years ago.

The CHAIRMAN. What is the difference in price on this ore now, as compared with the price before the war?

Mr. RICE. There is one great difference and one that we steel people think most unjust. We had no trouble for a great many years in buying all the spar we wanted at from $4.25 to $5 and $6 a net ton f. o. b. cars Shawneetown, Ill. There are two large producers down there, one known as the Rosiclaire Flourspar and Lead Co., the mine of the John R. McLean estate, while the other is the Fair View Lead & Fluorspar Mining Co. I believe that is the style of the company. They were both very keen for the business for a period of a great many years and we have had good competition. To-day, however, our contract for the year 1918 is $20 a ton, and during the very severe weather in the winter, when transportation was bad and labor conditions not good, we did pay as high as $33.50 for fluorspar in the Kentucky district.

Senator STERLING. To what extent do you use fluorspar?

Mr. RICE. We used 3,264 tons. That was our consumption for the year 1917. That was 272 tons a month.

The CHAIRMAN. Is the Kentucky fluorspar a better grade than the Illinois fluorspar?

Mr. RICE. We are getting some very good spar out of Kentucky now. It is true that over a period of a great many years there has not been a very satisfactory production, for the reason that it was handled by the farmers in a large way. They seemed to be indifferent, and they could not be relied upon. You would make a contract with them, but they were the most unreliable bunch of people we have had to deal with in a very large way. I do not mean it because they are farmers at all, but just that element that you find down in that section of the country.

The CHAIRMAN. Can you give any reason for the large advance in price between the time before the war and 1917?

Mr. RICE. I do not believe it is justified at all, sir. It is certainly not justified from a price of $4.25 and $6 to a price of one large producer that I mentioned who is mining in southern Illinois at this time. I know for a fact that they are quoting now $35. That is for spot shipments, but the chances are that if you were to go and ask for a contract you could not get it. You gentlemen know enough about this to know that that does not seem justified in any sense of the word. Really, it is six times the former price, even taking the maximum price that I gave, of $4.25 and $6, as compared with the price they are asking now, of $33 to $35. It is true that it has softened up some in the last 60 days. I bought some tonnage of fluorshpar re-

cently. We wanted to try out a new concern that was probably going to be a large producer. Last week I gave an order for it at $24, but very much fluorspar can not be had at that price. The fact is that that is an exception, I think. They only did it to show us what they had, and in order to get started.

The CHAIRMAN. You have to have this ore in your business, do you not?

Mr. RICE. It is very necessary; yes, sir.

Senator STERLING. Just what do you use it for?

Mr. RICE. We use it as a flux, to purify the steel.

Senator STERLING. The demand has increased considerably since the war began, has it not?

Mr. RICE. Yes, sir; it has; but the production has also greatly increased. The Kentucky district, to my mind, is being developed very rapidly, and there are some very good people going in there now. For instance, both of the Illinois concerns who have held it in the hollow of their hands, so to speak, for many years—the McLean estate and the other one—are now operating in the Kentcuky district. Most of that so far has come from Critendon County, almost directly across the river from the Illinois deposits. However, there are new operations opening up in Nicholas County, right south of Lexington.

Senator STERLING. Would not this increased production tend to bring down the price, and is it not now tending to bring down the price?

Mr. RICE. As I said, we are getting some spar now at better rates. The purchase of last week was at $24, but even that is a very high price for spar. I think that is very high, considering everything.

The CHAIRMAN. Did you try to make a contract for any period of time at $24?

Mr. RICE. Well, we talked along that line, but they were hardly ready, Mr. Chairman, to do anything as yet. They claim they are going to have a production—and it seemed very reasonable—of 60,000 tons a year. Whether that is correct or not, I can not state. Don't you think yourself that that is a pretty big jump?

The CHAIRMAN. That is what we are trying to find out, why the jump was made, and the reason for it.

You also use ferrosilicon, do you not?

Mr. RICE. Yes, sir.

The CHAIRMAN. Just what is this ore used for; how is it used?

Mr. RICE. It enters into the manufacture of our steel. We are using two grades of ferrosilicon. The 10 per cent grade enters into the manufacture of ordinary steel, while the 50 per cent grade enters into the high-carbon steels, the war materials. Up until we got into the war and were handling the Government orders we did not use any 50 per cent ferrosilicon, but we have been fair-sized buyers of it for the last two years.

The CHAIRMAN. How much do you use a year?

Mr. RICE. Of the 50 per cent silicon we used around 40 or 50 tons a month. We are buying that from the Electro-Metallurgical Co., at Niagara Falls.

The CHAIRMAN. Do you get all you want in this country?

Mr. RICE. We have not purchased from any other source than the Electro-Metallurgical Co.

The CHAIRMAN. You have not purchased from any other source, you say?

Mr. RICE. No, sir.

The CHAIRMAN. You have always been supplied?

Mr. RICE. There has been a great shortage of it. It has been hard to get. We just run from hand to mouth all the time. We hardly ever have a car shipped that we do not have to trace it from both ends. They seem to want to work with us, and they are very nice about it. I think they have tried their best to take care of us. At the same time, we came in the game as users rather late, and they had many older customers and older contracts to take care of, and it was really in a sense by grace that they took care of us at all.

The CHAIRMAN. Has there been much difference in the price before the war and after the war?

Mr. RICE. We have had only two prices. Our first price was $99 f. o. b. cars our works, Steubenville, Ohio. Our price to-day is $155 a ton delivered.

Senator JONES of New Mexico. What was the price before you came into the market?

Mr. RICE. Really, I can not answer that. We were not buyers of it. We are buying from 10 to 11 per cent. I can not answer that question. We would not be using it to-day if it were not that we were making war materials—high-carbon steel.

The CHAIRMAN. Is there anything that can take its place?

Mr. RICE. No, sir.

Senator STERLING. It is this high-grade ore that costs so much, is it?

Mr. RICE. Yes, sir; 10 to 11 per cent. Of course, we are much larger users of the 10 to 11 per cent. The 10 to 11 per cent is either silvery iron or ferrosilicon; 10 to 11 per cent silvery iron is something that we use largely. They both contain the silicon which we want. Our average consumption of that for the last year was about 160 tons a month.

Senator STERLING. What is the consumption of the high-grade ore?

Mr. RICE. Forty to 50 tons.

Senator STERLING. Has there been any increase in the production of that since the war?

Mr. RICE. Of the high grade?

Senator STERLING. Yes.

Mr. RICE. Yes, sir. Whereas at the beginning of the war you might say there was only one producer, to-day there have a number sprung up over different parts of the country. There is one at Baltimore, the Shaw Inigan Products Co. There are four or five different furnaces making it up through the State of New York. There is one at Chattanooga, too, I believe.

Senator STERLING. There will be enough in this country to supply the demand?

Mr. RICE. Well, it is much easier to get than it was, although our source of supply has been through the Electro-Metallurgical Co.

Senator STERLING. Have you noted any reduction in price as the supply has increased?

Mr. RICE. Well, in the Iron Trade Review I have noticed that the prices are just a little easier, but very little. Possibly the price runs $5 to $10 a ton. Whereas, as I told you, we paid last year $99, this

year we are paying $155. I have seen mention of sales at possibly $5 or $10 a ton less than that, probably brought about by those other furnaces growing up in the country. (Addressing Senator Henderson:) I just mentioned to Senator Sterling that there had been a number of works started out over the country in the past year, making 50 per cent ferrosilicon, which enters so largely into war materials.

The CHAIRMAN. You also use magnesite, do you not, in your work?

Mr. RICE. Yes, sir; we do.

The CHAIRMAN. What is the situation relative to that ore?

Mr. RICE. In 1917 we used 1,282 net tons—107 tons a month. Prior to the war we used altogether Austrian magnesite—Austria-Hungary magnesite—as practically all steel companies did throughout the country. We, along with others, are very much pleased to see the development that has been made in this country. We are now getting all of our magnesite from this country. For a short time after the war started, when the imports from Austria were shut off, there was some raw Grecian magnesite brought into this country and calcined, but I do not believe there is any being brought in to-day. If it is, it is in small quantities, but I would rather say it was not being brought in.

Of the 1,288 tons that we used last year, and of what we have been using for the last two or three years, we have been using in a large way California magnesite. However, it is not the magnesite that is calcined through the West. We are getting it from the same company that we got the Austrian magnesite from. They seem to know how to handle it better and calcine it better, and they give us a better product than any we have seen from the West.

The CHAIRMAN. I notice that the domestic production of magnesite in 1918 was 6,587 short tons. That increased in 1917 to 310,000 tons.

Mr. RICE. Will you repeat that?

The CHAIRMAN. I noticed that in 1908 there was a domestic production in this country of over 6,000 tons. That increased, from 1908 to 1917, to 310,000.

Mr. RICE. Yes. That is very satisfactory, is it not? I think that is no doubt correct.

The CHAIRMAN. You are having no trouble at all in getting all the magnesite you want?

Mr. RICE. No, sir. On the other hand, they are rather pressing us to take magnesite to-day. The price for the Austrian magnesite, for which we made long-term contracts—possibly two or three or four or five years—ranged from $14 to $16 a ton, seaboard, which would mean Baltimore or Norfolk or some of these eastern ports. That is Austrian magnesite, however.

We have been paying pretty fancy prices up until recently for the American-made product. As compared with $14 to $16 a ton, we have been paying for a great deal of that material $85 a ton, but within the last 90 days I would say that price has been reduced. On Friday of last week, I believe it was, what we consider the two most reliable sources—the American Refractory Co., of Chicago, and the Harbinson-Walker Co., of Pittsburgh—reduced that price to $50 a ton. They did not do it in one jump. It was reduced from, say, $85 to $80, then $75, $65, $60, and $50. I believe that was about

the order. We, of course, were very much pleased over that reduction, because from $14 a ton to $85 a ton is going some. Besides, when they first started to make it in this country they had to build plants and experiment more or less. We are getting a much better product now than in the early days of the war; very much better.

Senator STERLING. Of course, there has been an increased cost of production?

Mr. RICE. Yes, sir. We could hardly hope, or expect, rather, that they could ever put it down as cheaply, on account of the freight. If it was in the East they no doubt could, but being located on the Pacific coast, I think it will be a long time, on account of the freight rate, before they can get down to the price of the Austrian magnesite. I do not know, of course, what may happen when the war is over.

The CHAIRMAN. Do you have trouble in getting shipments from the coast?

Mr. RICE. We are getting them, Senator. The raw material is brought in and it is calcined at Hartford, Ohio. It is not a great distance, possibly 150 miles from Steubenville. They bring it in in large quantities. They have brought some through the Panama Canal, but most of it by rail. They bring it there in large quantities. We have not had any trouble in getting it. In fact, as I say, they are anxious for you to take the material.

The CHAIRMAN. Do you buy direct from the producer?

Mr. RICE. As nearly as we can. When we were buying the Austrian magnesite we bought as nearly from the producer as we could. The American Refractory Co. owned a part interest in the Austrian plant, quite a large interest, and we are buying direct from them now. I would say that they are the producers. I might mention, in passing, that we gave orders to both of these companies, who are the most reliable ones, last week, and the Harbinson-Walker Refractory Co. have been building a calcining plant out in Washington at some place, the name of which I can not pronounce or spell. They put in a plant out there, and they are going to ship direct in the place of calcining it over here.

The CHAIRMAN. You also use manganese, do you not, to some extent?

Mr. RICE. Yes, sir.

The CHAIRMAN. What is the difference in price now on this ore as compared with the price before the war?

Mr. RICE. We were paying $38 to $40 a ton, seaboard, for manganese. I would say that that was a fair average price before the war. The price to-day is around $250 or $275 for 70 per cent; but, as you know, the American Iron and Steel Institute has taken it up with the different steel interests and are asking them to use a leaner product and are asking us to use 70 per cent. They have not fixed the price of $250 a ton for 70 per cent. It is $245 to $250 for 70 per cent manganese, as compared with $38 to $40 for 80 per cent before the war.

The CHAIRMAN. Where did you get that manganese before the war?

Mr. RICE. We have always purchased the English ferromanganese; that is, before the war we always purchased English ferromanganese. We have purchased it largely since the war started. We had some

old contracts and we still have tonnage to come forward. That has been quite a serious situation with us, because to-day we have five or six months' stock on hand, or between five and six months. We have tonnage coming from Crocker Bros., of New York, who have had our business in a large way for a great many years. We have a tonnage of low-priced manganese to come forward. We were informed last week at a meeting in Pittsburgh that the Government had put an embargo on manganese, to take effect yesterday. If that is the case, we are going to be in a pretty serious way, because we have, as I say, five to six months' supply on hand.

We have about five or six months' supply to come forward of low-priced manganese. We are perfectly willing to use domestic manganese, and we have been using the manganese made in this country in quite a large way. It just happens that we have no contract now, none at all. It has been shipped forward, but not just to our liking, exactly, because we much prefer this manganese. This manganese was due last year, some of it the first part of last year. I believe it was something like 600 tons. We have 600 tons, I believe, to come forward yet. We are perfectly willing to use domestic manganese, but we had counted on this coming forward, and we were told only last week that we were liable not to get it. It puts us in a bad way. It does not give us a chance to look around. We have 498 tons to come forward. That is all we have purchased.

The CHAIRMAN. How much do you use per month?

Mr. RICE. Our president, Mr. Kirk, has taken this matter up with Mr. Peterson, Director of the Bureau of Imports, War Trade Board. He wrote him under date of May 8, but we have not yet had any reply.

It might be of interest to you, Mr. Chairman, to read that letter [handing letter to the chairman]. I think that will give you an idea of what we are up against.

The CHAIRMAN. I suggest that you read the letter so that it will go into the record.

Mr. RICE (reading):

MAY 8, 1918.

Mr. FRED B. PETERSON,
*Director Bureau of Imports, War Trade Board,*
*Washington, D. C.*

DEAR SIR: While in Pittsburgh yesterday in attendance at a meeting called by Mr. Farrell, chairman of subcommittee on ferroalloys of American Iron and Steel Institute, which meeting was called for the purpose of emphasizing the necessity of conserving ferromanganese and chrome ore, we were informed by Mr. Detter of Crocker Bros., No. 30 East Forty-second Street, New York City, that an embargo has been placed by the United States Government on the importation of ferromanganese, effective May 13.

The only source of supply we have for ferromanganese at the present time is Crocker Bros., who owe us a matter of 498 tons of 80 per cent standard English ferro manganese, all of which should have been delivered by December 31 last.

There is a good part of that that should have been delivered in the first half of the year, if my memory serves me right. It is on account of the shipping, of course. We have understood it and have worked with them.

We had on hand May 31, 562 tons. Our consumption for the month of April was 101 tons, which monthly consumption was far below our normal consumption, due to the fact that we used as much spiegeleisen as possible in order to conserve ferromanganese.

I might mention that that tonnage was to come forward much faster than that, but we have been satisfied to take the minimum. We are using 101 tons, which is about as low as we are going to be able to go. As to spiegeleisen, if we could get the minimum reserve of stock back there we would feel very much easier.

Our supply on hand will probably provide for our needs for five months and we have no ferro bought from any other source.

If Mr. Detter's information is correct, namely, that the Government has placed an embargo on the importation, there doubtless was good reason for this action, but naturally we are concerned as to the reason and when such embargo will likely be lifted.

Crocker Bros. state they are in position to ship something like 13,000 tons of ferro to the States over the next 90 days; that they have the necessary license from the English Government and that the only reason that prevents their making deliveries is the embargo above mentioned.

While in the present crisis we are not so much concerned about profits as we are in producing to the utmost of our capacity those grades of steel which our Government and our allies require, and which we are and have been furnishing in large quantities, namely, ship plates, shell steel, torpedo boat destroyer steel, pipe for oil country needs and some sheets for Government use, if some arrangement can be made by which Crocker Bros will be permitted to deliver to us the unshipped tonnage mentioned at the rate of not less than 100 tons per month, it will mean a saving of approximately $50,000, a large portion of which our Government will secure in the form of income and excess profit taxes. This for the reason that the tonnage in question was bought at $164 per ton, f. o. b. cars Baltimore, whereas, even if domestic ferro of the new standard 70 per cent grade can be purchased it will undoubtedly cost $100 per ton more for the reason that the price fixed for 70 per cent standard is $250 per ton, and while we have not calculated what 80 per cent manganese would cost on the basis of $250 per ton for 70 per cent is doubtless would mean a difference of $100 per ton in our cost.

We are hopeful that the necessary relief can be given before our stock on hand is materially reduced and shall be pleased to bear from you on the subject at your early convenience.

Yours, very truly,

LA BELLE IRON WORKS,

_____,

*President.*

The CHAIRMAN. How many tons do you use a month of manganese ore?

Mr. RICE. We used, in the year 1917, 1,555 tons, or 130 tons a month.

The CHAIRMAN. Was that all the same grade?

Mr. RICE. That was all 80 per cent English ferro. I will correct that. That was the 80 per cent manganese, but during the year 1917 we did purchase, through Crocker Bros., some 80 per cent domestic. It was a pretty good round tonnage, because we realized as the months went by that it was going to be more and more difficult to get the English ferro manganese. We have, however, in keeping with the plans followed out and worked out by the American Steel Institute, and the wish of the Government, been using 40 per cent speigeleisen in a much larger way than we had formerly done. That, of course, is made in this country.

The CHAIRMAN. When did you begin to do that?

Mr. RICE. During the year 1917. It ran something like this. In the month of January last year, 101; February, 95; March, 89; April, 215; May, 189; then it ran 367, 178, 225, 167, 109. In the month of December we were shy of spiegeleisen.

The CHAIRMAN. Then, in your opinion, the situation relative to manganese is bad at this time.

Mr. RICE. It is so far as we are concerned, Mr. Chairman. We have laid the cards on the table with Mr. Peterson. We knew nothing about this at all. We should have had this tonnage last year. In the mean time, we have not made, for months and months past, any contracts for English ferromanganese. We have kept trying to get these deliveries as best we could. In the meantime we have been buying domestic manganese and helping along by using spiegeleisen in a larger way, from month to month.

Senator STERLING. But if the embargo were not laid you could get all the manganese you want?

Mr. RICE. Yes, sir.

Senator SHAFROTH. Would there be any difficulty in getting manganese in this country without importation if a minimum price were made sufficiently large to stimulate production?

Mr. RICE. I hope to see the day when we will be using our own domestic ores and making all the manganese and spiegeleisen that we need without the importation of any. I hope that 80 per cent manganese and 70 per cent manganese will be supplied. The 80 per cent ferromanganese we have been making in this country is equal in every respect, so far as we can see, to the English.

Senator SHAFROTH. Is there not a prospect of the development of production of manganese in this country?

Mr. RICE. Oh, yes, sir.

Senator SHAFROTH. It has been stimulated, has it not—the production in this country has been stimulated?

Mr. RICE. Yes, sir. We are very glad to see it and want to encourage it in every possible way. As I told Senator Henderson before the meeting began, on all our alloys we want to encourage the production and use of domestic goods in every way possible, especially from the purchasing standpoint. From my standpoint, for instance, it is very much more satisfactory to use domestic alloys and materials of one kind and another than to use the imported ones. Take magnesite, for instance. We have never had so much satisfaction in buying that, in a sense, as we have had since we have been buying the domestic.

Senator STERLING. That would be one of the compensating features. It would teach us to realize the value of our own resources.

Mr. RICE. That is true; yes, sir.

The CHAIRMAN. Has your company entered into agreement with the Government, or any agency of the Government, relative to the manufacture and production of steel for Government use?

Mr. RICE. We have pledged the Government in every way we possibly can our whole-hearted support, not only our president and officials, but down through the mill in the different departments—the superintendents, the foremen, etc. They had around, within the last two weeks, pledges supporting the Government in every possible way, and they were signed very, very largely.

The CHAIRMAN. Signed pledges, were they?

Mr. RICE. It was a pledge which the president had distributed throughout the different departments, and it was signed by hundreds and hundreds of workmen; and, as you know, and as this letter states here, we are getting out all kinds of material for the Government.

The CHAIRMAN. The La Belle Iron Works is now engaged in producing for the Government, is it not?

Mr. RICE. In a very large way; yes, sir.

The CHAIRMAN. Just what are they manufacturing for the Government?

Mr. RICE. Ship plates, sheet steel, torpedo-boat destroyer steel, pipe, shrapnel, coal tar, sulphate of ammonia, benzol, and toluol, and so forth.

The CHAIRMAN. As the purchasing agent for the La Belle Iron Works for the last 10 or 11 years, you have given the matter of the production of these metals and other products that you have mentioned considerable thought and study, have you not?

Mr. RICE. I have; yes, sir.

The CHAIRMAN. It has been in the line of your duty, has it not?

Mr. RICE. It has; altogether.

The CHAIRMAN. In view of the fact that the La Belle Iron Works is manufacturing articles largely for the Government, do you feel that the Government should do something to assist and help these companies in securing these rare metals needed in the prosecution of the war?

Mr. RICE. We would be very glad to see the Government encourage the production of such alloys—such materials as chrome ore, manganese ores, magnesite, and so forth—if they can, and we in turn will help in every possible way by using these materials, although they possibly have not been just of the analysis that we have had in the past in some instances.

The CHAIRMAN. Have you given any thought as to the nature of the encouragement that should be given, the kind of encouragement?

Mr. RICE. I have not.

The CHAIRMAN. You have not given any thought as to whether or not price fixing, a maximum or minimum price, would be wise or otherwise?

Mr. RICE. Well, with reference to that, Mr. Chairman, it seems to me, as a buyer for our company, that we should receive some help, some protection in some lines that might be made to apply to all; they fix the price of our product, as you know—fix the price of fuel and of coke, and of all the products that we manufacture—and, as you know, since they have fixed a price they have very materially reduced some of the fancy prices that were being charged prior to that time by all of the steel companies. Yet, on the other hand, we have instances, such as in fluorspar, as I mentioned to you here, we think entirely out of line. And it must be, because I know of quite a number of the producers down in that section, and the way they solicit orders and go after you, you would think it was a mighty profitable business; a mighty greedy lot, they are, and there must be an enormous profit in it to my way of thinking.

The CHAIRMAN. Is that profit going to the real producer, or to the broker or seller of the product to the consumer?

Mr. RICE. I think in a very large way to the miners and the producers. I believe that that is correct. Another instance, they have helped themselves to some extent because competition has made them do so, but the manufacturers of magnesite, as I mentioned here, the price of Austrian magnesite at seaboard is $14 to $16 a ton, and we were compelled to pay for good round tonnages $85 a ton; more than

five times the former price. Now, on account of competition and more people entering into the manufacture of calcine magnesite, they have reduced the price to $50, and that has all been brought about in a very large way in the last 90 days.

Senator STERLING. Do you not think that with reference to both magnesite and fluorspar that the increased production and the competition between producers will bring the price down to what is reasonable in the course of a short time?

Mr. RICE. That should apply; yes, sir; but it does not always work out that way. I have less hope of it being done as to fluorspar possibly than any other line.

Senator STERLING. You think there is a likelihood of combination between the producers of either of those products?

Mr. RICE. I would not say that, but I do know that in a large way the production sale of fluorspar has been held by two large operators, and I think they are in it to get all the money they can get out of it.

Senator STERLING. Of course you would not expect the price to come down to what it was before the war?

Mr. RICE. No, sir; because labor enters into it in a very large way, and we do not expect anything of that kind.

Senator JONES of New Mexico. You stated that these two Illinois concerns, producing fluorspar, had gone into the Kentucky field and had obtained a footing there?

Mr. RICE. Yes, sir; they have.

Senator JONES of New Mexico. To what extent?

Mr. RICE. I was informed only yesterday from some information which I asked for at the office after leaving here, and from that I believe that the Illinois field is producing to-day about 65 per cent of the fluorspar, that used in this country, as nearly as I am able to arrive at it. The remaining 35 per cent is largely produced in Kentucky, and, of course, we shall have to include Colorado.

Senator JONES of New Mexico. And how much of the Kentucky fluorspar is controlled by the two concerns which control the Illinois product?

Mr. RICE. I really can not answer that, Senator. They have unlimited money back of them, and I imagine they will be the largest producers over there. I believe they will be the largest producers in that field of any single producer.

Senator JONES of New Mexico. So far as that material is concerned, where the production is controlled by a very few individuals, would not a law making it a criminal offense to charge an unreasonable profit reach that industry?

Mr. RICE. That is something that you gentlemen over here can answer better than I can.

The CHAIRMAN. Do you think it could be controlled through licensing the business?

Mr. RICE. Not as I understand licensing. I do not know that I understand that just in its fullest meaning. I do not know that that would help it. If you could explain to me, Mr. Chairman, just what you mean.

The CHAIRMAN. You have had no experience, then, under the present licensing feature under the Food Administration?

Mr. RICE. No, sir.

The CHAIRMAN. You have had no such thing in the mining industry?

Mr. RICE. No, sir.

Senator STERLING. There are other sources of fluorspar, then, than the fields in Illinois, Kentucky, and Colorado, are there not?

Mr. RICE. I have no doubt that there are, but I do not happen to know of them. I would think so. I know some of the largest steel companies have brought large tonnages of fluorspar up from Mexico, but we have never had any of that, neither have we seen it, but I would think there would be fluorspar found in other sections of the United States. Some of these gentlemen here from the department ought to be able to tell us that.

The CHAIRMAN. Do you know of any fields, Dr. Smith?

Dr. SMITH. We have some in Arizona, but they are minor as compared with Illinois, Kentucky, and Colorado.

Mr. RICE. As I understand the situation, I believe Kentucky is going to be the coming field, if they get some reliable people in there to work it, but they have the most unreliable bunch of producers down there that we have ever come in contact with.

Senator JONES of New Mexico. What do you mean by unreliability—the failure to keep their contracts?

Mr. RICE. You can not trust them out of your sight, sir.

Senator STERLING. The witness said a while ago they were all farmers. I was disposed to resent that.

Senator JONES of New Mexico. Do they produce a poor grade, or what?

Mr. RICE. They will sell you fluorspar and guarantee it to analyze 85 per cent, and possibly 5 or 6 per cent in silica—not to exceed 5 per cent in silica—and they will ship you washed gravel spar, and you are liable to get any kind of mongrel fluorspar; you are liable to get washed fluorspar or unwashed. You are apt to get gravel or lump or ground. We had an occasion here just within the last 60 days of a shipment from a Kentucky point, I do not think we ever will be able to use it. We paid, I think, $30, whereas our contract price this year is $20. We paid $30 for this, and it is some sort of a ground spar, altogether different from what we purchased, but we were pretty glad during the winter months to get anything. We have not used that, however, as yet.

The CHAIRMAN. What do you mean when you say that your contract price for this year is only $20?

Mr. RICE. This year, the year 1918, our price is $20. That contract, however, Mr. Chairman, was made about last August or September, if my memory serves me right. If you contract now you are liable not to get it.

The CHAIRMAN. Do I understand these Kentucky producers contracted with you last fall?

Mr. RICE. No: this is southern Illinois.

The CHAIRMAN. For $20?

Mr. RICE. For $20; yes, sir.

The CHAIRMAN. And now they will not furnish you this ore at $20, at the contract price?

Mr. RICE. No; I would not say that, sir. You misunderstood me. They are shipping on that contract, but shipping conditions down there through the winter months were very bad. They mine this

at these mines, in southern Illinois, there around Golconda and Fairview, and those two mines are located in a very bad place. They have to barge all of the material; they can not get into any railroad with either one of these big operations; the nearest railroad to them is 12 miles away; they barge part of it 12 miles and they barge the other 39 or 40 miles, and then load it on cars, and the Ohio River, as you know, was frozen over for weeks and weeks last winter, and for other reasons they were not able to get out, and it was during that period we bought the Colorado spar and spar elsewhere—Kentucky—anywhere we could get it, anything that looked like spar.

The CHAIRMAN. Have you anything more, Senator Jones, you would like to ask?

Senator JONES of New Mexico. No.

Mr. MACBETH. Mr. Rice, how far ahead have you met your common requirements? Did you state that? Was it five or six months?

Mr. RICE. Not that far. Mr. Macbeth, I may say that we are not covered very far on chrome ore at this time. It is not just a satisfactory position for us to be in.

Mr. MACBETH. Do you anticipate, Mr. Rice, that you will be able to meet your requirements from Canada?

Mr. RICE. I think so; yes, sir.

Mr. MACBETH. I should like to ask you what is the difference in price between the Colorado product—that is, flourspar—and the Illinois and Kentucky product, at your place?

Mr. RICE. I would say, during the winter we bought 600 to 700 or 800 tons or Colorado spar at prices, as I remember them—they were made not just exactly in the winter; along from November to January, possibly. The prices, as I remember, ran from $25 to $27.50, with freight equalized with the Illinois district, which would make it net us, about, in round figures, about $30.

Mr. MACBETH. You are aware, are you not, that ferrosilicon is a product of scrap iron and filings, silica and quartz sand, of which there is any amount in the United States?

Mr. RICE. Yes, sir.

Mr. MACBETH. And that it is possible to supply any demand there possibly could be for ferrosilico, owing to the quantity of supplies that enter into the manufacture; you know that, do you not?

Mr. RICE. State that again, will you, please?

Mr. MACBETH. You are aware that ferrosilicon is a manufactured product, are you not?

Mr. RICE. Yes, sir.

Mr. MACBETH. Made from scrap iron, iron filings, quartz, sand, or silica; they all enter into it, depending on the quantity at the point of manufacture—the availability of supplies. Now, there could not be any demand for ferrosilicon that could not be met in the United States, could there?

Mr. RICE. You refer to 10 per cent ferro silicon, or 50 per cent?

Mr. MACBETH. I do not know. I know nothing about the percentage, but know of the enormous quantity of materials and the minerals that we have that enter into the manufacture of ferrosilicon——

Mr. RICE. I do not think there is any question but that we can all be furnished from the United States, and, the fact is, we have never purchased any from any other point, either 10 or 50 per cent.

Mr. MACBETH. How, then, could you go about stimulating the production of ferrosilicon?

Mr. RICE. I think the demand has in a very large way stimulated the production in the last two years, whereas I stated a few minutes ago, that at the beginning of the war practically the only people making ferrosilicon was the Electro Metallurgical Co.; that is, in a very large way. To-day I would say there are 8 or 10 producers of 50 per cent ferrosilicon.

Mr. MACBETH. As to the magnesite. In Stevens County, Wash., there is being calcined to-day as much magnesite as the entire production and importation of the United States for the year 1917. The output of Stevens County to-day on calcined magnesite is something in the neighborhood of 500 tons, which could be increased to 1,000 tons if that amount were required, as the deposits are exceedingly large; in fact, one of the outcrops that goes through the county is three to five hundred feet in width, and stands up as boldly as this building, so you men who use magnesite need never fear there will be any danger of your not obtaining all the magnesite you require.

Mr. RICE. I believe that to be the case because we have been getting a very good product of calcined magnesite from the native rock.

Mr. MACBETH. These deposits were only found in 1916; in 1916, rather, it was first ascertained that this outcrop was magnesite. Prior to that time it was considered to be lime. It has been resting there all these years.

Mr. RICE. We are very glad to know it, and it certainly has helped us.

Mr. MACBETH. It is a better quality than the Austrian magnesite, too, so claimed.

Mr. RICE. I do not think there is any question but that it is just as good. My open-hearth superintendents will tell you so.

Mr. MACBETH. That is all.

Mr. MANNING. Might I offer a statement which has some bearing on the ferrosilicon situation?

The CHAIRMAN. Certainly.

Mr. MANNING. The problem is not one of raw materials, but of electric-furnace capacity, and electrodes for those furnaces. It is one of manufacturing capacity rather than one of raw materials, and the same thing holds true for some of these other metals. We have a great shortage of electrodes in this country, and the real problem in some cases is the raw material, and in others it is fabricating plants. We have, for instance, in sulphuric acid, both the raw material problem there and the fabricating-plant problem. In the case of ferrosilicon, that is the limiting factor, the electric-furnace capacity.

The CHAIRMAN. That is all, unless you think of something else, Mr. Rice, that you would like to bring to the attention of the committee at this time.

Mr. RICE. There is one other item that I might mention that we have only had one source of supply for a good many years. We are users, along with a number of the steel companies, of ferrophosphorus. It is used in making tin. It is used in making tin and sheet bar, for the phosphorus contained in sheet bar is in very large quantity, from which they manufacture sheets and tin plates. As far as I know, we only have one source of supply, and we never had but one source of

supply in this country. Mr. J. J. Gray, of Rockville, Tenn., is the gentleman that holds that in the hollow of his hand.

Senator JONES of New Mexico. Tell us about it, and to what extent it is used, etc., and about the price.

The CHAIRMAN. That is not mentioned in the bill?

Senator JONES of New Mexico. No.

Dr. MANNING. I think that is in the Lever bill, phosphate rock.

Mr. RICE. All steel companies, a large percentage of them, use it. We are not large users of it, it is true. We use around 40 to 50 tons a month. The price prior to the war was $52.50 a ton f. o. b. Rockdale, Tenn., with a $4.40 freight rate, making it come to us at $56.90. To-day the price is $125, an advance from $52.50 to $125, but that is the only source of supply, except a very, very small tonnage that we have been able to get from Niagara Falls; we are only able to get that in two, three, four, or five ton lots. It is, as I understand it, a sort of by-product from some of the works up there. I do not know just how they produce it.

Senator JONES of New Mexico. This name ferrophosphorus, is that a manufactured product or is it found in that composition?

Mr. RICE. No, sir; it is made from a rock. You can explain that better than I, possibly, Dr. Smith.

Dr. SMITH. I suppose it is an alloy like the ferromanganese, except instead of having manganese, Senator, it contains the phosphorus.

Senator JONES of New Mexico. This double name, "ferro" and "phosphorus" would indicate a combination, and whether that composite material is found in the natural state or whether it is a manufactured product, is what I wanted to get at.

Mr. RICE. They get the rocks right around Rockdale, Tenn., and they make it in a sort of blast furnace, like they do pig iron.

Senator JONES of New Mexico. In other words, they get the phosphoric rocks?

Mr. RICE. Yes, sir.

Senator JONES of New Mexico. And then get the iron and combine the two, is that it?

Mr. RICE. No; I am really not in a position to give you very much information on it. I think this phosphoric rock is in the order of an ore, is it not?

Senator STERLING. In what form does it come to you?

Mr. RICE. In sort of pigs, slabs, possibly that long and that wide (indicating).

Senator JONES of New Mexico. Then it must be a manufactured product?

Mr. RICE. Oh, yes, they manufacture it; make it in blast furnaces, ore furnaces or blast furnaces.

Senator JONES of New Mexico. Do you know any reason why somebody else could not make it?

Mr. RICE. I wish there were other deposits in this country; I think competition ought to be encouraged; I think production ought to be encouraged.

Senator JONES of New Mexico. Do all the steel companies use this ferrophosphorus?

Mr. RICE. A great many of them do; yes, sir.

Senator JONES of New Mexico. Ferrophosphorus is not used as a fertilizer, is it?

Dr. MANNING. No; the War Department is using phosphorus for trench warfare.

Senator JONES of New Mexico. That is, phosphorus?

Dr. MANNING. Yes.

Senator JONES of New Mexico. What is this ferrophosphorus?

Dr. MANNING. It is a manufactured article.

The CHAIRMAN. Just how is this manufactured ferrophosphorus used?

Mr. RICE. We use it to get a phosphoric content in the sheet bar and tin bar, and other pig. We melt it up into our open-hearth furnaces.

Senator JONES of New Mexico. That is about as important a product as ferrosilicon, is it not?

Mr. RICE. It is very necessary to have it; yes, sir. We are small users of it, in a sense, using only 40 to 50 tons a month; but we have never been able to find but the one source of supply, except, as I mentioned, this at Niagara Falls.

Senator STERLING. That is existing now, to your knowledge?

Mr. RICE. Yes, sir.

Senator JONES of New Mexico. You believe if we are going to do anything in the way of controlling ferrosilicon or similar products that we ought to include this ferrophosphorus?

Mr. RICE. I do. Do you not, Mr. Chairman?

The CHAIRMAN. I should think so.

Mr. BASTION. May I ask what purpose it serves in the tin into which it enters?

Mr. RICE. I will answer that in this way: The tin bar has got to have a phosphorus content. I am not an open-hearth man, but I know we have to have it in tin sheet bar, largely in tin bar. I am sorry I can not answer the question more fully.

Mr. MACBETH. I should like to make one statement to Mr. Rice, showing how relief can be obtained from the exactions of the fluorspar producers, as that method is now being used by the Government in respect to lead, copper, and zinc. By applying to the Federal Trade Commission and stating to that commission that the price being charged by the fluorspar producers is unreasonable the Federal Trade Commission will examine the books of the fluorspar producers and ascertain the cost. If the price then charged is excessive, you could go before the price-fixing board of the War Industries Board and have a price fixed that would be satisfactory. The large copper and lead producers of the West have all had their books examined by the Government officials, and at this time the large copper producers have Government officials, accountants, that are at hand, keeping in touch with the cost of copper. That could be done very readily by your fluorspar people by your making the proper representations to the Federal Trade Commission and a price fixed. You have the agencies now in existence to settle your troubles.

Mr. RICE. We are very glad to have it explained in that way, and we will bear that in mind. I thank you, sir.

The CHAIRMAN. Mr. Macbeth, did you read Mr. Baruch's statement before the House committee?

Mr. MACBETH. I did, but I just glanced at it, Mr. Chairman.

The CHAIRMAN. I note he says this:

We are performing a large measure of control now, but I think it ought to be more definitely and legally fixed than it is.

Mr. MACBETH. Yes; I have that section right now, Mr. Chairman. Well, the President, you know, has established a price-fixing board, of which Mr. Robert S. Brookings, of St. Louis, is the chairman, and that board has the authority to fix a price on any material.

The CHAIRMAN. I am taking Mr. Baruch's statement, who is the head of that board, and largely due to the fact he has been handling this matter down there, and he apparently goes on record as feeling that this ought to be more definitely and legally fixed in some way.

## STATEMENT OF MR. A. B. CONKLIN, OF ASHLAND, ALA.

The CHAIRMAN. Give your full name and residence to the reporter, Mr. Conklin, please.

Mr. CONKLIN. My name is A. B. Conklin; residence, Ashland, Ala.

The CHAIRMAN. What business, if any, are you engaged in?

Mr. CONKLIN. In the mining and refining of graphite.

The CHAIRMAN. What is the extent of the graphite business in Alabama?

Mr. CONKLIN. The graphite deposits in Alabama have been known to exist for the last 50 years, in milling quantities, and it has been milled in a small way for about 25 years. Up until the beginning of the war it had probably reached an investment in the neighborhood of $200,000; since that time increased capital has been attracted to the field, and I presume to-day there is at least three and one-half million dollars invested in the business within a radus of 100 or 150 miles in Alabama.

The CHAIRMAN. Will you kindly state to the committee the conditions of the Alabama graphite industry?

Mr. Chairman, at the time I became interested in the graphite business in Alabama, early in 1915, there were four mills then producing graphite, and at that time there was some partial restrictions on the importation of the foreign product from Ceylon and Madagascar by the English and French Governments, presumably for the purpose of preventing any of its products reaching Germany, and the business received a very strong impetus as the result of this scarcity and the use of this material in war munitions. And, as the development increased, the consumers continued to come to Alabama and there was a strong demand for our product at rapidly increasing prices or materially increasing prices. I will say, however, that no such marked increase is shown as my predecessor has just reported. But we could sell every pound of graphite we could make long before it was made at good, profitable prices, taking into consideration the cost of producing it at that time. And this continued to be the case up until about the middle of last year. During that time of encouragement this large investment was made in the development of a resource that had practically been undeveloped before in this country. Following the entry of this country into the war to the beginning of the imports that commenced to come in from Ceylon, the consumers of graphite were less interested in our product and the market became weaker, until to-day we have practically only one

consumer who is after our product, excepting those who had contracted some time last year, before this removal of restrictions on English and Madagascar graphite which had been put on to prevent any of the material getting over to Germany. And, naturally, under this condition our industry is quite in a depressed condition right now.

We have made our investments without any assistance from the Government, either financially or in a legislative way, and have prepared ourselves to increase the percentage of domestic production, say, from an average of 8 to 19 per cent, I guess it would average about that for the last seven or eight years, to a percentage I should say of at least 50 per cent of the entire requirements of our country, as they have averaged for the last seven years. Now, some of the consumers of this product have accumulated very large stocks of the foreign graphite and appear reluctant to change their methods so as to adopt the use of ours, even if it is furnished for, say, one-half or two-thirds of the price of the foreign product. They are operating along traditional lines of mixtures, and it naturally puts a great depression on us, and it is only a question of time when the mills will deteriorate, and the source of supply will become depleted, very much reduced, unless we have some reason to look forward to the future, and some assurance that we will have a market for our product at a reasonable price.

The CHAIRMAN. Is your product suitable for crucible making?

Mr. CONKLIN. Yes, sir. The Crucible Steel Co. of America today is practically our only market. They manufacture their own crucibles, use all their own crucibles, make none to sell at all, in fact they are purchasers of additional crucibles, but they are making them themselves, and are using all of these crucibles in the manufacture of steel, and they are naturally subject to a severer test than would be possible to meet, as I understand. Mr. Guthrie, a practical crucible man, and one of their mining engineers, and a chemist, visited the Alabama field last fall, and he stated that a good crucible could be made out of all Alabama flake graphite, and that their company was willing to adopt the use of our flake exclusively if they could be assured of a sufficient quantity of the desired quality.

With the explanations that I have given you concerning their uses, I should judge they were amply qualified to pass on the merits of our graphite as a crucible element, as much so as any crucible maker there is in the United States. There are but a few makers—you gentlemen probably know that. I have sold some of the products of my own company to the Bridgeport Crucible Co., of Bridgeport, Conn. Mr. McFarland, of the Bridgeport Crucible Co., told me while he was only using a small percentage—you understand we are not producing anything nearly now, or have not the capacity to produce nearly the amount that is consumed—but he told me he could make very much better crucibles by the use of 25 per cent of the American with the Ceylon than he could when using the Ceylon alone; that our flake had a hard structure and was very tough, and in the expansion of the crucible, when heated, it would withstand greater heat than where they were using the Ceylon flake alone.

I have been told also by Mr. Sidell, of Philadelphia, who has been interested and connected with the crucible manufacture and trade for

the last 35 years, that there is no question at all but that a splendid crucible can be made from all Alabama flake.

The CHAIRMAN. Have you this in sufficient quantity to supply the desired quality and quantity for these people?

Mr. CONKLIN. We have, provided we had the milling facilities and the deposits opened up.

The CHAIRMAN. It is there in the earth?

Mr. CONKLIN. Yes, sir; we have the quantity. I believe we have enough graphite in Alabama to supply all the needs of the country for 50 years.

The CHAIRMAN. There is also graphite in Georgia, is there not?

Mr. CONKLIN. I guess there is graphite in Georgia, some in Pennsylvania, some in New York, some in Texas, and some in Colorado. I think, however, Alabama is undoubtedly the most important center in the production of graphite. We produce about two-thirds of all American product, do we not?

Dr. SMITH. Of that quality?

Mr. CONKLIN. Yes; of that quality.

The CHAIRMAN. How do the prices of domestic graphite compare with those of imported graphite?

Mr. CONKLIN. I am not thoroughly posted as to the prices of Ceylon graphite, but the best Ceylon I should say was running from—well, our price is running from one-half to two-thirds of the best Ceylon crucible graphite, but our graphite is complete in the mill and ready for use when it reaches the crucible maker, while with the foreign product it is necessary for them to mill all of that before they use it. That necessarily entails some additional expense, and there is a small percentage of loss—that is, what is reduced to dust it is necessary for them to take a very much less price for the dust than they pay for the crucible product, because it would be only suitable to compete with the amorphous.

The CHAIRMAN. Then, as I understand, the imported graphite is milled in this country?

Mr. CONKLIN. Yes; all that is imported; none of it is prepared; the crucible makers mill it themselves before using it.

The CHAIRMAN. In your opinion, what are the reasons for the present small demand for domestic crucible graphite?

Mr. CONKLIN. Some of the crucible makers have interests in Ceylon, I understand; import their own product. Other crucible makers are following along the lines of old traditional methods and mixtures, and are reluctant to change their formulæ to admit of the use of more than a small amount of the American flake. They claim, having gone through the experimental stages, that to use American clay to replace the German clay that had been used prior to the entry of this country into the war, that it would entail trouble and expense, and they are reluctant to take up the change.

The CHAIRMAN. How long have you been in the graphite business?

Mr. CONKLIN. I started in Alabama late in 1915. The building of the mill began possibly early in 1915.

The CHAIRMAN. Since then you have given this matter considerable thought, have you not?

Mr. CONKLIN. My undivided thought and attention. It has been my exclusive business.

The CHAIRMAN. What remedy would you suggest to relieve the present situation?

Mr. CONKLIN. I should say that it is necessary to take some very decided measure to control the importations. Use some method that could be designed by you people, and also prescribe at least a minimum price. Our development down there is a lot of small companies, representing small capital. We have no large capital interested in the business at all. With that limited capital, if a company gets an investment of $50,000 to $100,000, or $150,000 in the property it usually has cost them a considerable amount more than they expected, and by the time they are ready to produce they are short of funds, and it is necessary to raise some money on their property in order to carry them along, and where there is no fixed security it seriously embarrasses the producer. If a minimum price could be fixed, and then the foreign imports controlled in some way, I am not prepared to say how it could be brought about, but, gentlemen, I feel we are entitled to some reasonable degree of protection down there. I am not asking any favors.

The CHAIRMAN. You are not asking for any money?

Mr. CONKLIN. No, sir; we are not asking for any money. We represent small interests, and we have developed this business, and we can continue to develop until, as I have stated, we have resources to furnish all the graphite the United States requires, but we do feel now that we need some sort of protection in the way of a minimum price and a preventive furnished that will prevent the possibility of a large accumulation of this foreign product that can be held as a club over our heads, and bear our prices. For instance, right now the best price that is available, that I know of, for the highest grade crucible graphite is 3 cents a pound under what they paid last July. Well, our production costs have increased from 30 to 50 or 60 per cent since that time, and we hardly can contemplate what they are going to be in 60 days from now. They are taking our labor; they have got three of my boys in the draft. One is in France, one in Camp Wheeler, and one in Arcadia, Fla.; and I have got another, I expect, who will go any minute; my own sons, I mean. That is in addition to the help we are taking, so when it comes to selfish interests, if you could stop the war by an elimination of every dollar invested in the graphite business of Alabama you would please me better than giving us favors. But we believe consistently that we can aid the war by you gentlemen furnishing the shipping that is now used to bring this foreign product in here, to carry soldiers and food to my boys in France, rather than to send it 12,000 miles and 12,000 miles back with a cargo of graphite. We can furnish it here at two-thirds the price for which they buy the foreign product.

Senator JONES of New Mexico. Have you taken that matter up with the Shipping Board?

Mr. CONKLIN. Yes, sir.

Senator JONES of New Mexico. What did they say about it?

Mr. CONKLIN. The Shipping Board called a meeting on the 15th of March, of producers, consumers, and importers—that was called by Mr. McDowell, these gentlemen representing the Bureau of Mines and the Survey had representatives at that meeting. At the hearing was represented the consumers and the crucible makers; all of those

who apparently had selfish interests were represented. The Crucible Steel had no representatives there, the Bridgeport Crucible Co. had no representatives there, and several others. But as a result of that hearing our Alabama product was laid before them, and the Shipping Board made restrictions of the imports, cutting out all of the importations from April on until the 1st of July, then restricting the importations to a limit of 5,000 tons from then up until January 1, next year.

Senator JONES of New Mexico. Five thousand tons a month?

Mr. CONKLIN. No, sir; 5,000 tons. This is not a large tonnage.

Senator JONES of New Mexico. You say we imported about 42,000 or 43,000 tons last year?

Mr. CONKLIN. About 32,000 tons, was it not, Senator?

Senator JONES of New Mexico. The statement here is about 42,000 tons.

Mr. CONKLIN. As I understand the figures from the survey bulletin, in the first estimates there were about 32,000 tons imported and about 6,800 tons domestic production last year, with about 6 per cent of the domestic production suitable for crucibles; but those figures possibly have been revised.

Dr. SMITH. There was 42,000 for both years, 1916 and 1917.

Senator JONES of New Mexico. That figure included amorphous as well as flake graphite, did it?

Mr. CONKLIN. Oh, yes.

Senator JONES of New Mexico. There are two kinds of graphite under that?

Mr. CONKLIN. Yes.

Dr. SMITH. Senator Jones, 31,000 tons was the importation of crucible graphite last year.

Senator JONES of New Mexico. And your product is crucible graphite, is it?

Mr. CONKLIN. Yes, sir; that is the percentage. What I am talking on now is crucible graphite.

Senator JONES of New Mexico. What is the difference between that and the amorphous graphite?

Mr. CONKLIN. The amorphous is a crushed graphite; it has no flake; it is of a different character, contains carbon, and is of a similar character, except ours is a crystal and flake. Dr. Smith could explain the technical differences better than I.

Senator JONES of New Mexico. I just wanted to get at it roughly, that is all. But it comes in connection with the crucible graphite?

Mr. CONKLIN. The flake graphite enters into the crucible product; yes, sir; the amorphous does not; that is used as lubricant and paint ingredients and stove polishes and in lead pencils.

Senator JONES of New Mexico. Are they found together in the same deposits?

Mr. CONKLIN. No; they are different. However, we make in the milling of our crystal and flake graphite—there is a part of our product that is reduced to a very fine state that, to a certain extent, is competitive with the amorphous graphite, but that is a very low grade of our product; in fact, it is a by-product that we have as yet been unable to practically realize the cost out of handling it. The flake is our factor.

Senator JONES of New Mexico. But you are interested in the amorphous graphite as well as in the crucible?

Mr. CONKLIN. Yes, sir; as a little by-product.

Senator JONES of New Mexico. Was it contended at this hearing that you speak of that they had to have Ceylon graphite?

Mr. CONKLIN. Yes, sir.

Senator JONES of New Mexico. But you did not agree with that view?

Mr. CONKLIN. Yes; very largely. We are not prepared to-day to furnish anything like nearly all of the requirements, but at that time there had been accumulated an amount of Ceylon and Madagascar product that would carry the crucible makers for practically a year, or more than a year, in advance if he were to give credit for any of the domestic product with it.

Senator JONES of New Mexico. They probably had 25,000 or 30,000 tons on hand?

Mr. CONKLIN. In the neighborhood of 25.000 or 30,000 tons, was the amount that they had on hand.

Senator JONES of New Mexico. When was that imported?

Mr. CONKLIN. Well, last year and up until March 15. I believe that amount covered the amount in transit and on hand up until March 1.

Senator JONES of New Mexico. These importations being restricted to 5,000 tons now, and the ordinary use amounting to 25.000 or 30,000 tons, that will soon adjust itself, will it not?

Mr. CONKLIN. We had hopes of relief, Senator, as the result of that order, but for some unaccountable reason they seemed to be very sanguine of their ability to get that shipping order modified, and I have understood, since I have been in Washington this time, they have secured another permit for in the neighborhood of 900 tons, to be deducted, however, from this next 5,000 tons, but it is an additional barrier to our market, and the position of the purchaser of this material is very naturally to want to buy it at the lowest price.

Senator JONES of New Mexico. Tell us why they prefer to import this rather than buy your product.

Mr. CONKLIN. As I explained a minute ago, some of the crucible makers own their own mines in Ceylon; others have local interests that for selfish reasons they are probably trying to retain a dominant position in the crucible manufacture and the crucible production of this country. Now, I am selling to crucible makers, you understand. Those are rather pertinent questions for me to answer. However, I believe you gentlemen want frank information, and I guess I have been hurt all I could be hurt, anyway, and others are reluctantly postponing the necessity of any experimenting with the domestic flake. Mr. McDowell, at this meeting that I just referred to, that was called here in March, made the suggestion to the crucible makers. He said, "You men can go back behind your barn and make some experiments in your mixes, and you probably can devise some means that will enable you to use 35 per cent of this domestic product and in that way relieve this shipping." We had hopes that that would open up the market again and relieve the large amounts of product that we were accumulating down there, and give us additional credit, at least for the time being, but we have experienced no such relief, and, as I have just stated, on the contrary, we have

learned that there has been nearly 900 tons permitted to be shipped from Ceylon into this country since that shipping order was issued.

Senator JONES of New Mexico. I notice from the data that I have before me that the price of this crystalline graphite has just about doubled within the last two or three years. Is that the price of the imported article or the domestic article which has doubled?

Mr. CONKLIN. I am not as familiar with the price of the imported article as with the domestic. The price of the domestic article has practically doubled in the course of two or three years. On the other hand, production costs have advanced very much more than that, on coal and labor 300 or 400 per cent.

Senator JONES of New Mexico. I did not mean to infer that your price was too high, but I was just trying to find out whether, with respect to price, there was any inducement for the use of the domestic product as compared with the imported product.

Mr. CONKLIN. I stated in my remarks a few minutes ago, Senator, that our product had never sold, to my knowledge, for more than one-half or two-thirds of the current price of the best Ceylon crucible graphite, and that ours was prepared all ready for use in the crucible, and it was necessary to mill all of the Ceylon graphite before they could use it as a crucible element.

Senator JONES of New Mexico. The deterring factor then arises from the fact that they have been accustomed to use this particular grade of foreign graphite, and have planned their output ahead, taking that into consideration, and they do not want to consider a change. Is that about it?

Mr. CONKLIN. I have concluded that was the reason for some of them; others are influenced from the fact of their interests, of course.

Senator JONES of New Mexico. How many are there of these users of graphite such as your product in this country?

Mr. CONKLIN. Six to ten would cover all of the important users for crucible purposes.

Senator JONES of New Mexico. What occasioned the increased use of this product during the last two years? Is it due to the additional war requirements?

Mr. CONKLIN. It is classed as a war mineral, and it naturally would meet with an increased demand and consumption. I have addressed a little communication—I did not know that I was perfectly privileged to meet with you people this morning—and I have addressed a little communication to Senator Henderson, as the chairman of this committee, that might answer some of those questions, if you care to read it.

Senator JONES of New Mexico. If that is a brief statement, it might very well go into the record.

The CHAIRMAN. It may be included in the record.

Mr. CONKLIN. Here is a copy of a letter that I tried to get to bring with me, also. This appertains to the adaptability of the use of the American flake for crucible purposes, and here is a copy of a letter that was written by the Atlantic Terra Cotta Co. to the Ceylon Graphite Co.—that is the name of an Alabama concern—giving their experience in the use and manufacture of crucibles from all Alabama flake, and comparing the number of heats they got out of them. I should like to have that used, if it may be acceptable.

Senator JONES of New Mexico. We may as well read these at this time.

The CHAIRMAN. Yes.

Senator JONES of New Mexico (reading):

WASHINGTON, D. C., *May 14, 1918.*

Senator HENDERSON,
*Chairman Committee on Mines and Mining, Washington, D. C.*

DEAR SIR: On behalf of the graphite producers of Alabama I wish to submit a short statement for your honorable committee's consideration in connection with the mineral bill.

Graphite has been known to exist in milling quantities in Alabama for nearly half a century, and has been milled in a small way for the past 25 years.

Following the beginning of the European war new developments have followed each other in rapid succession until the business has grown from an investment of possibly $200,000 to about three and a half million.

From the beginning of the war and up until the United States declared war upon Germany there had been limited restrictions on our imports of foreign graphite. During this time our business was receiving every encouragement from the consumers who were sending their representatives to Alabama to buy our graphite and were taking every available pound at constantly advancing prices, but as soon as the foreign product began to arrive again in large quantities the demand gradually became weaker, until now there is scarcely any market at all.

The Crucible Steel Co. of America, of Pittsburgh, Pa., who are one of the largest manufacturers of steel crucibles and use all and more than they make, have been using large quantities of our graphite. Last November they sent their practical crucible man, Mr. Guthrie, and one of their mining engineers and chemists to Alabama to investigate our graphite resources, and they stated at that time that a good crucible could be made of all Alabama flake and that their company was willing to so modify their mixture as to adopt its use exclusively if they could be assured of a quality in sufficient quantity to meet their requirements.

Mr. Macfarlane, of the Bridgeport Crucible Co., told the writer that they could make a better crucible by using 25 per cent of domestic flake than when they used the Ceylon alone. In tests that have been made by the Atlantic Terra Cotta Co. crucibles from all Alabama flake, many more heats have been made than the average where Ceylon was used.

Alabama has, in addition to her developed graphite resources, large deposits of this valuable war mineral, but if we are able to continue our operation some more expedient measure will be necessary than a small reduction in our imports to cause some of the consumers to adopt even a limited per cent of domestic graphite in their mixture. Some of them have Ceylon interests of their own; others are obstinately adhering to traditional methods that call for Ceylon graphite when the domestic product can be obtained at a much less price and ready for use in their mixture.

Our business has been developed without any financial or legislative assistance from the Government. We have developed a resource in this mineral that has been supplying only about one-seventh of our consumption for the past seven years to capacities that are now able to furnish one-half our requirements, and we ask that this war necessity be given reasonable consideration and an assurance of being able to meet any contingency that is possible to arise.

Very respectfully submitted,

GRAPHITE PRODUCERS ASSOCIATION OF ALABAMA,
By A. B. CONKLIN, *Secretary,*
*Ashland, Ala.*

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ATLANTIC TERRA COTTA CO.,
*New York, December 26, 1917.*

THE CEYLON CO., *Birmingham, Ala.*

GENTLEMEN: Attention Mr. E. E. Ellis, president:

It has not been possible to reply to your letter of December 10 any earlier for the reason that the tests on your crucibles have only been completed within the last day or so. We made four (4) #80 crucibles, two of them of the

graphite which you shipped us first, which we designated as No. 1, and the graphite which you shipped us second, which we designated as No. 2. We do not recall at this moment whether there was supposed to be any difference in these two lots or not, but if you will look up the correspondence you can undoubtedly inform us on this point. These crucibles were delivered to a local foundry and we fear that the result obtained may not be altogether a fair result, for the reason that the crucibles were in the possession of this foundry for at least six weeks, if not longer, before the test was made. The result was, as the crucibles were kept in a dry room, that they were thoroughly dried out and in practically perfect condition before they were used. Our experience has been that it makes a great difference in the result obtained from crucibles as to whether or not proper care is taken by the foundry in preparing the crucibles for use by slowly drying them out for a considerable length of time. We have had tests made of identically the same mixture made from the same batch and obtained totally different results, due to the fact that the first test would be made from crucibles used as soon as delivered and the second test with the same crucibles, but kept in a hot room for a considerable period.

Of your four crucibles, which were all tested on copper, two of them stood 21 heats each. These two were made from graphite designated by us as No. 1. Of the two made from the No. 2 graphite, one stood 21 heats and the other stood 42 heats.

Senator JONES of New Mexico. That is all the heats mentioned there?

Mr. CONKLIN. Seven to ten heats is a very good average, as I understand, for Ceylon crucible.

Senator JONES of New Mexico. You say 7 to 10?

Mr. CONKLIN. Yes; 7 to 10, or 7 to 15, is an extremely good average.

Senator JONES of New Mexico. By that do you mean that number of uses?

Mr. CONKLIN. Yes, sir.

Senator JONES of New Mexico. I supposed that was it but was not sure. And you say 7 to 10 is a good average?

Mr. CONKLIN. Yes, sir.

Senator JONES of New Mexico. And yours ran up to 21 and others stood as many as 42?

Mr. CONKLIN. Yes, sir. Some of these practical steel men would probably be better authority than I to give you that information. Mine is only hearsay regarding the number of heats, but that is what I understand, that 7 to 10 is a good average and that 7 to 15 or 10 to 15 an exceptionally good average.

Dr. SMITH. I will say, Senator, I have a memorandum that puts the good average as high as 25 for Ceylon graphite.

Mr. CONKLIN. With American flake, however.

Dr. SMITH. With American flake.

We think this result is rather extraordinary, especially as the crucibles were tested on copper, which, as you know, is much more severe than brass. Had the test been made on brass, we have no doubt that somewhere between 25 and 30 heats would have been obtained.

As we have said, the result is indeed surprising as before we went into the crucible business we were told it was impossible to get satisfactory results from domestic graphite. It is, of course, possible that the results we have obtained are freaks and could not be secured in quantity under ordinary commercial use. We would appreciate any information that you have to give us as to the character of the graphite you supplied and would like to know if you are in a position to furnish us a product exactly the same as the samples, and if so, what the price would be in carload lots. There is, of course, another factor which enters into the result obtained, and that is the balance of the ingredients used in the mixture, for the graphite, as you know, is only about one-half of the mixture.

We have spent a great deal of money in experimenting and have had our laboratory working on the question of producing a good crucible for many months, and we think we have gone into the subject much more intelligently, so far as we have been able to ascertain, than many of the old-line crucible companies. These people, as near as we can find out, stick pretty closely to their old methods and are apparently content to let well enough alone and are either unable or unwilling to conduct large scale experiments on scientific lines.

The crucibles tested are the same ones that were exhibited at the chemical show, and as Dr. Maynard will undoubtedly be interested in the result, we would appreciate it if you would forward him a copy of this letter, if you see fit. If there is any demand for crucibles in the South, there is no reason why we could not manufacture them successfully at our Atlantic plant.

Yours, very truly,

(Signed) WILLIAM H. POWELL, *President.*

The CHAIRMAN. The samples of the graphite that you furnished for these tests, were they picked for an average of what you had there?

Mr. CONKLIN. I did not furnish that graphite; this was furnished by the Ceylon company, Mr. Ellis.

The CHAIRMAN. How far is this from you?

Mr. CONKLIN. It is right in our district.

The CHAIRMAN. You do not know then anything about this reference as to whether or not these were specially picked samples?

Mr. CONKLIN. They will indicate this by the analysis. I believe he refers to it as an 80 or 85 per cent carbon. No; he did not give the percentage of carbon. I will say, Senator, in answer to that question, however, that Mr. Johnston, the chemist for the Crucible Steel Co. of America, showed me a list of his determinations on graphite during last year, I just looked over it hastily, a very voluminous document; they use great quantities of this material; and they require in our product a 90 per cent carbon. There are only a few mills to-day that are making that, but they all can make it if they were assured the market would justify it. I am making it at the Clay County Graphite Co., of which I am president, and have ever since we started business.

The CHAIRMAN. Mr. Conklin, if the Alabama mines could be assured of 25 per cent of the market at a minimum price below that of the imported graphite, would that stabilize and save your industry to meet future needs of the country?

Mr. CONKLIN. That would be at a price of 25 per cent under the——

The CHAIRMAN. Twenty-five per cent of the market; at a minimum price below that of the imported graphite, 25 per cent below that.

Dr. SMITH. May I state the question?

The CHAIRMAN. Yes.

Dr. SMITH. If of the total consumptive needs of the country you could be assured of 25 per cent of that quantity and could be assured of a price somewhat below the fixed, a little below the imported price, that could be furnished?

Mr. CONKLIN. If that price was not a doctored price of the foreign product; if it had been long assured, give them at least, say, 12 or 18 months, I think that would cover our necessities very nicely. I think it would let us out, that is with our present capacities. I feel it is, as I stated in our remarks heretofore, that we will be able to furnish all the graphite that the country needs.

Senator JONES of New Mexico. Evidently involved in that question is a thought well worthy of consideration. The quantity of graphite now used during the war is much greater than any anticipated need of the country after the war, I would take it, and would

you want your industry to be fostered to the extent of producing all the requirements during the war, so that after the war you would have a very much excess capacity?

Mr. CONKLIN. I do not believe, Senator, it would be possible to furnish all during the war. We would not expect that, because it would be practically a physical impossibility for us to prepare ourselves, say, in two years' time to take care of the maximum requirements of the country.

Senator JONES of New Mexico. The thought has been suggested here, with regard to other commodities, that we should develop the domestic supply to such an extent as to meet the high war demands.

Mr. CONKLIN. It would not seem unreasonable, but if the capital is allured into this business now and then the gate is open after the war, it would be disastrous to the industry; that is, if it is an open policy to let all this foreign product come in at prices materially lower than ours, with labor which I understand they secure in Ceylon at 2, 3, and 4 cents a day, of course it would be an unfortunate thing for the investors.

Senator JONES of New Mexico. The suggestion has been made that the importation of manganese should be absolutely stopped as soon as we can reach the period where we can produce the supply, and we only produce about 25 per cent now of the requirements, and it is a very large item, and if we were to go to the extent of encouraging the production of that quantity of manganese, which is far beyond any peace requirement, would we not stimulate the industry into a certain disaster at the conclusion of the war?

Mr. CONKLIN. Senator, I am not so familiar with the comparative percentages used in manganese in peace times as compared with war as I am in regard to graphite. I believe that if the graphite industry was fostered or encouraged to such an extent that we were now furnishing all of the requirements of the country that there would be less liability, however, for us to suffer at the conclusion of the war than there would be in the case of manganese, because I do not believe that the consumption of graphite has been increased in anything near the proportion since the beginning of the war that manganese has been increased. Am I correct in that, Dr. Smith? Electrical furnaces have come in and taken the place of quite a good deal.

Senator JONES of New Mexico. I think you are quite right about that, that the consumption of graphite apparently has only about doubled, and the consumption of manganese has far more than doubled.

Mr. CONKLIN. Yes, sir; and on the other hand there are other avenues of outlet in the graphite industry that are developing, such as paints, lubricants in dried forms, and used in connection with greases and oils that are growing very fast, increasing very rapidly, while with the use of manganese, it is purely and simply a war product.

The CHAIRMAN. Can you remain in the city and continue your statement to-morrow, Mr. Conklin?

Mr. CONKLIN. Yes, sir; if the committee desires.

(Thereupon, at 12.25 p. m., the committee adjourned until Wednesday, May 15, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

WEDNESDAY, MAY 15, 1918.

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met at 10 o'clock a. m., Senator Charles B. Henderson (chairman) presiding.

Also present: Dr. Van. H. Manning, Director of the Bureau of Mines, and George Otis Smith, Director of the United States Geological Survey.

## STATEMENT OF MR. A. B. CONKLIN (Resumed).

The CHAIRMAN. Mr. Conklin, how do the prices and terms offered you to-day compare with those of last year or earlier?

Mr. CONKLIN. Senator, we began producing graphite in April, 1916, and as soon as I had samples ready of my own product I submitted them to the consumers, to four, five, or six of the principal consumers of graphite, and asked for prices on them. I received quotations from practically all of them at that time, and the quotation or offer from the Bridgeport Crucible Co. was 11 and 13 cents. In order that you may understand what that means, at that time I was making two grades, one of 90 per cent carbon, which we classed as No. 1 flake, and the other 85 per cent, or No. 2 flake, and in that letter they asked if I would entertain a contract. That was considerably higher than any of the other bids; in fact, some were as low as 6 or 7 cents. This offer came from the Bridgeport Crucible Co. I answered that letter and told them that if they had any proposition to put up on contract I would be glad to consider it. I want to say also that in this first communication they offered this inducement; they said:

> As you are just beginning, you will doubtless be in need of money, and in considering this we will be glad to pay you spot cash on receipt of bill of lading, so if you will notify us when you get your car loaded and send bill of lading the draft will be promptly honored as soon as it reaches Bridgeport.

They came back and submitted this contract that they would take all my output up to 75 tons a month, which was considerably more than my capacity. It struck me as a very fair contract, and without any further negotiations I accepted their proposal. That carried me until June, 1917—that is, from the last of May, 1916, until the first of June, 1917. Our business relations had been extremely pleasant; they never had had a single complaint about the product. I went down there in January, 1917, to see them concerning a renewal of the contract. In the meantime the price of graphite had

materially increased; there was a considerable number of sales being made at or near our price. However, the product that I was making was running considerably higher than the average of the district, and I asked him if he would be willing to enter into a contract for another year's time. He said that he hesitated to make any commitments—this was Mr. Macfarland, the manager of the company—he hesitated to make any commitments longer than January 1, 1918, and he considered the matter a few minutes and then offered this suggestion, in the way of a question:

How would you consider a modification of your present contract, raising your price to 13 and 15 cents—that is, from 11 cents and 13 cents to 13 and 15 cents—and extend your contract up to January 1, 1918?

That would give me practically six months at an advance of 2 cents a pound. He said:

We would be very glad to-day to buy your stuff at 18 cents a pound, but on the other hand when we entered into the first contract we paid you the top of the market.

I told Mr. Macfarland that struck me as so eminently fair that he could practically consider it as accepted, and as soon as I returned home I would confirm it, which I did.

Then the freight embargo was put on, and following last May, a year ago this month, I made my last shipment to Bridgeport, owing to the impossibility of shipment. When my next car was ready, I began communicating with Mr. Macfarland and he took it up with the Hartford & New Haven Railroad people, and was unable to get any permit to get this material through, and finally, under pressure through telegraphic communication I told him it would be necessary for us to make some disposition of this product, that I placed it in a warehouse in Ashland, Ala., to his credit, see that it was insured, if he would pay for it, but otherwise I must have relief. He wired back that if we were unable to store and hold it in our warehouse that we were at liberty to make other disposition of it. I then wired the Crucible Steel Co. of America for a price on the car and they offered me 20 cents a pound for it, which was a material advance over what I was getting from the Bridgeport Crucible Co. I sold that car for 20 cents a pound, and when my next one was ready, they offered 18 cents for it. All this time I was contracted, yet was unable to ship to the Bridgeport Crucible Co., and they continued to pay me 18 cents until about this March; then they cut their price to 17 cents. So from last July up until April there was a cut of 3 cents a pound, from 20 cents to 17 cents, in spite of the fact that our production costs have been constantly increasing in the last six months, have been very rapidly increasing, as labor is one of the largest elements in the cost of the production of this material.

As a result of our inability to ship material to the Bridgeport Crucible Co. they began covering on their requirements with foreign product, and while they had been using, I am advised, about 25 per cent of the domestic product with 75 per cent of Ceylon, they substituted Madagascar flake for the domestic and purchased very large quantities of that, so that in taking up the question with the Bridgeport Crucible Co. as to sales following the removal of our local shipping restrictions they advised me they were not in the market, so that that outlet has been eliminated from the fact that they had prepared for an emergency with a foreign product.

The CHAIRMAN. Can you produce with reasonable profit at this time at 17 cents a pound?

Mr. CONKLIN. Well, I offered to sell—I will answer that question by my commitments to the Crucible Steel Co. on this last car. When they offered me 17 cents I declined to accept it; my price was 18 cents, which was really a cut of 2 cents from the price of last year, and I made that offer with this explanation, that in view of the fact that our labor and production costs were so much higher I felt we were entitled to have as much as their peak of price had been last year, but I was willing to let them have that car at 18 cents, then I was asked to quote on a six months' contract for my output—this was by the Crucible Steel Co. of America, and I quoted at 20 cents, which they declined. So I have not as yet turned either the stuff I have on hand or committed myself for the future. However, as the situation has been during the last 60 or 90 days, I would be very glad if I could be assured of my other conditions we could make good money at the 17 cents at our mill.

The CHAIRMAN. Do you know what it costs to import graphite to this country?

Mr. CONKLIN. You mean the freight?

The CHAIRMAN. The cost, the freight, and the value of it.

Mr. CONKLIN. Not classified. I understood when we were getting, say, 20 cents for our No. 1 flake that the best Ceylon would be selling for 36 cents, 32 to 36 to 38, I guess, and I believe there have been some sales made for more than that. Our product is also ready milled for their mixers; there is no further expense connected with our product when it is taken by the crucible makers; it is all ready for the mixers and in the Ceylon it is not all milled, it just comes from the mine, and it is necessary for them to mill all of it, and, of course, in that milling process there is a certain percentage of their flake that is reduced to dust, which would affect the values, and that would lower the product, as the dust would be competing with more of the amorphous or cheaper grade graphite.

The CHAIRMAN. How have these lower prices and lack of demand affected the people in Alabama that are in this business?

Mr. CONKLIN. I presume you could get more definite and specific information by consulting the survey in regard to that, but I should say that shipments during the first four months of this year have been nearly cut in two. We are not shipping very much more than one-half of that we did last year, and when you consider that we have now an increased capacity available of four, five, or six times what we had last year, the effect on the business is very serious.

The CHAIRMAN. If the consumers wished to cooperate with you they could help the Government by saving a good deal of shipping in this connection, could they not?

Mr. CONKLIN. Yes. As an illustration, just take the conditions as they existed prior to last July when there were nominal restrictions on our importations. The activity of the market that I have just illustrated in our prices evidenced the fact that where they would come in and offer us a market that our Alabama situation, as far as production is concerned, would adjust itself.

The CHAIRMAN. These consumers that you refer to no doubt had in mind the transportation facilities at the time they started to import again?

Mr. CONKLIN. Yes, sir.

The CHAIRMAN. Do you know whether or not those transportation facilities are going to be better next year?

Mr. CONKLIN. Of course I am not prepared to say what the facilities are in that respect. It is natural to suppose, though, that with the loss in our shipping and the increased requirements of our Army abroad and the serving of our intended purpose with our Allies, it would naturally require a very great proportion of the shipping, and it may be it would be harder to get available bottoms for Ceylon graphite next year than this year, even with the increase in shipping.

The CHAIRMAN. Even so, have you received any assurances from anyone that you would be furnished cars to ship this ore to the consumers?

Mr. CONKLIN. No, sir; that was a very depressing defect on our market, because we had large quantities of this contracted at good prices. All the Bridgeport source I had was cut off, eliminated; it was necessary for those people to use the foreign product because they really preferred ours.

The CHAIRMAN. And they could not get yours because they could not get cars?

Mr. CONKLIN. Yes, sir; that was a serious handicap; it cut off my product the last months. Fortunately, I was able to turn my product at that time at a very much better advantage than under the contract. However, it lost the outlet of that much domestic product, which was replaced by the foreign product.

The CHAIRMAN. If the consumer would give up his importations he would want to be reasonably assured of getting rail transportation, would he not?

Mr. CONKLIN. That question I will answer by a statement Mr. Macfarland gave me last November. I told him that we hoped to have this freight situation cleared up; that we were going over it with a determination of clearing up that uncertainty, and I said to him that now we are increasing our capacity and hope to be in a position to furnish you people with a very large amount of graphite, and, inasmuch as you have been ardent supporters of our product, we prefer to give you every facility and every advantage of getting all that you desire. And I asked him how much he thought he could use. He said from about next March or April—that would be this last March or April—he hoped to be in a position where he could take from four to five cars a week.

The CHAIRMAN. Did you get any assurance from the Director General of Railroads that he would furnish the cars for that purpose?

Mr. CONKLIN. The shipping situation has apparently cleared, but in the meantime the Bridgeport Crucible Co., through their fears of being unable to get that cleared—in fact, it was not cleared until the 1st of March—had so loaded themselves up with foreign product that when we applied for that outlet they said they were not in the market.

The CHAIRMAN. When you refer to the shipping problem you refer to the rail problem?

Mr. CONKLIN. Yes, sir.

The CHAIRMAN. Have you stated these facts relative to price to anyone connected with the Government?

Mr. CONKLIN. Yes, sir. We have endeavored to keep the survey advised very closely of all these facts, and since it became so serious, along last December, we kept in constant touch through Dr. Smith and his associates with the Bureau of Mines, and then later on as the Shipping Board was organized we have kept those people fully advised and met with them several times. I have been in Washington every few weeks, rather representing the producers down there, and have been asked to come up and look after those interests, and those gentlemen have rendered every possible assistance that I could ask, and as a result of a meeting that was called on the foreign shipping the middle of March by Mr. McDowell of the War Industries Board, there was a curtailment of all shipments of graphite from May 1 to July 1 that restricted the importation for the last six months to only 5,000 tons, but I understand since I have reached Washington this time that through some reason or other there had been another 889 tons slipped through. I do not know how it happened. Of course, that is an additional barrier to the market.

The CHAIRMAN. How do your costs this year compare with those of 1916 and 1917?

Mr. CONKLIN. I should say it costs us 100 per cent more to produce than it did early in 1916; easily 100 per cent. Our labor is the principal factor, and I should say there has been an advance in the last six months of easily 50 to 60 per cent.

The CHAIRMAN. Besides labor, what other elements enter into this high cost?

Mr. CONKLIN. The coal. When we started our mill we were able to get a splendid coal at $1.15 a ton on a $1.15 freight rate. Now we have to pay as high as $5.50, but after the Government named a price we are getting the same grade of coal at $2.35, but that is double. The freight rate is $1.35 to $1.65 as against $1.15 to $1.25. Then the repairs and maintenance is a very large factor in the production of graphite, in the milling system. All repair parts are way higher, and it is not only the first cost but it is the loss incident to the delays and the impossibility of getting them. For illustration last September I ordered repair parts for the crusher, and that was delivered in March this year. Those were emergency parts, but we were able to patch it along and get along with the old ones, but at a great disadvantage.

The CHAIRMAN. Can you keep in the business at these high costs provided you have some assurance of a market and prices equal to last year?

Mr. CONKLIN. Yes, sir.

The CHAIRMAN. You have been in the business for some years; you know what the business is. What help do you want from the Government?

Mr. CONKLIN. Senator, I believe this bill, with very slight modifications, would be all that we would ask. We are willing to leave ourselves in the hands of the Interior Department. We feel that we have been very justly and equitably considered at their hands and if that bill could be passed, I feel that the appropriation is entirely inadequate providing it was necessary to come to the assistance in the way of purchases; however, I believe if the measure is passed, even with the appropriation as it stands and the outlet for our

product became thoroughly convined that they would be required to use certain amounts of our graphite if they got any at all, or protection measures put on the foreign product, that even with the amount available that we might get along. However, that is a question that I would not feel as well qualified to answer as these gentlemen who are giving it closer attention.

The CHAIRMAN. You say you think the bill is all right with a few modifications?

Mr. CONKLIN. Yes, sir.

The CHAIRMAN. Can you point out what you have in mind when you refer to the modifications?

Mr. CONKLIN. Well, the first would be the amount available for handling this. I think the first amount mentioned in the House bill was $15,000,000, while it may be there would not be anywhere near that amount used, but I think it would make the bill that much stronger if you had the privilege in case of necessity of using it.

The CHAIRMAN. You feel, then, that the $10,000,000 provided for in the bill is too small an amount?

Mr. CONKLIN. Yes, sir.

The CHAIRMAN. You understand how it is arranged for handling this amount, do you not?

Mr. CONKLIN. Yes, sir; a revolving fund.

The CHAARMAN. A revolving fund?

Mr. CONKLIN. Yes, sir.

The CHAIRMAN. And a $50,000,000 fund no doubt could be used to take care of a tremendous volume of business, it might run to $150,000,000 in business.

Mr. CONKLIN. Yes, sir.

The CHAIRMAN. Because the money would be coming back into the revolving fund and only be used where necessary, and as the orders come in the Government would be repaid, and that would go back into the fund?

Mr. CONKLIN. Yes, sir.

The CHAIRMAN. That is one modification. Have you any others in mind?

Mr. CONKLIN. It would seem to me that a price-fixing feature would be desirable. That was in the original measure, as I understand.

The CHAIRMAN. Do you mean a maximum or a minimum price?

Mr. CONKLIN. I do not think there would be any harm with both. However, with a minimum, I think the duties of those who administer the bill would be simplified with just the minimum. I am speaking more particularly of our business than that of other businesses.

The CHAIRMAN. You are referring to graphite, the business you are engaged in?

Mr. CONKLIN. Yes; my testimony I would like to have your committee consider simply as bearing on the graphite industry. I am not familiar with these other industries.

The CHA'RMAN. I am referring to your testimony with reference to graphite and its production.

Senator SHAFROTH. Are you a producer or manufacturer? I was not here when you began your statement?

Mr. CONKLIN. I am a producer. I am president of the Clay County Graphite Co. (Inc.), of Ashland, Ala. I am also secretary

of a little producers' association that was formed late last year following some of these troubles that began presenting themselves regarding shipping difficulties?

Senator SHAFROTH. Is this graphite mined?

Mr. CONKLIN. Yes, sir.

Senator SHAFROTH. And you represent the people who are the owners of the mines?

Mr. CONKLIN. Yes, sir; producers; mining it and milling it ready for the crucibles.

Senator SHAFROTH. Do you realize that in fixing a maximum price that means that you can not sell for more, but can sell for less than that maximum price, and in the event that they should fix a maximum price lower than the price which would be fixed by supply and demand, that it would have a tendency to diminish production instead of increasing production?

Mr. CONKLIN. Yes, sir.

Senator SHAFROTH. The object of this bill, as I understand, is first to increase production and stimulate the manufacture by prices that will justify the miner in getting out the metals or the ores, and another object of the bill, as it was introduced in the House, was to so limit the price that there could not be any very great profits made by the producer or by the manufacturer.

Mr. CONKLIN. Yes, sir.

Senator SHAFROTH. Now, by reason of the increase in the price of wages and material that is used in getting out the ore, and if it should increase further, so that the miner could not get out the product nor the manufacturer sell the product at the maximum price fixed, do you think that would be right to either the producer or the manufacturer?

Mr. CONKLIN. Senator, I believe as long as that bill would be administered by fair men, as we have met in the Interior Department, that we would be satisfied to leave ourselves in that court; and I believe that in justice to the Government, which is ultimately paying for nearly all of the graphite by-products—a great majority of them—that it would be justice to it as well as to the ultimate consumer to leave with the Government all of the powers of protecting against unreasonable profits or profiteering. However, as I stated to you in my answers to the questions a few minutes ago, I thought that the minimum price was more nearly necessary and that we were not so much interested in the other, although I feel it would be justice and probably the measure would have more opposition. Of course, I do not know what you gentlemen are encountering in your legislation, but that was the idea that passed through my mind.

Senator SHAFROTH. There is no doubt it is the object of everyone to increase the production and at the same time prevent excess profits.

Mr. CONKLIN. Yes, sir; that is exactly my reason for stating that probably a maximum limit would be advisable in this measure.

Senator SHAFROTH. But the question with us is whether a maximum price does produce that condition. The experience which we have had with wheat is not very good. We fixed a maximum price on wheat, and wheat substitutes immediately went up, and now the cheapest thing in feeding strength that is grown in the way of a cereal is wheat; so cheap has it become in some parts of my State

that they have been feeding it to animals, which destroys the very object of the legislation; and the barley and the rye are away above wheat in price, and the farmer naturally will sell and dispose of those things that are high and will use and consume for his stock or for lower uses the wheat, and it has been done in a number of instances. And in planting, of course, the farmer naturally plants that which he would make the most out of, and as he thinks he would get a better price for barley and rye, he naturally plants them, unless he is stimulated by something in the nature of an appeal to patriotism, and that controls often in those instances; but when you follow the natural conditions it produces a greater production. Now, I do not see how the fixing of a maximum price, unless you fix it very high, is going to have anything but a retarding effect on production. Of course, if you fix it very high, so that the operation of supply and demand will go on in the ordinary way, if it is a large amount it will not interfere, but if you happen to get it too low, then you have the conditions adverse.

In those cases where you can use substitutes it is probably clearer than it is in other instances, but to stimulate a product a minimum price unquestionably does it, and everybody is in favor of the minimum price. It is my theory that the way to catch the excess-profits man is to do it by taxation, make him yield 40, 50, or 60 per cent of the profits that he makes, and that equalizes the profits that are made by those people. If it is a low profit that he makes, he should not be charged so high a rate as on high profits, and consequently by our taxation we catch that excess profit when a fellow attempts to get greedy in that way, and it seems to me a better way of equalizing than by having a man say, "Well, you are making too much; I will allow you 10, 15, or 20 per cent." The uncertainty as to what would be allowed is the thing that makes a man study whether or not he will go into producing and opening new mines; he wants to have an open market, and it is satisfactory to him when the natural principle of supply and demand lowers his price, but when it is lowered arbitrarily by somebody there is always a contest between whether this price favors this man or another man. If you fix that price at so much of course the people right along the railroad can afford to produce, but the man who is 10 miles in the country can not, and all those conditions seem to make it so difficult of administration that you could not do exact justice. That is the reason I feel that the best way to do it is to attempt to regulate it by some tax that catches everybody, and if he has made even a small profit, which he is entitled to, or a little above it, he will have to pay a little tax; if he makes 200 or 300 per cent, he will have to pay a greater tax. Do you not think that is the better way of curbing excess profits than to attempt to fix prices upon each particular article? If excess profits are very great then the Government will get, say, two-thirds or three-fourths of such profits, which, of course, is applied to the prosecution of the war.

Mr. CONKLIN. Your argument seems to be very sound, Senator. Of course we could not feed graphite to hogs. There is practically only one use for graphite, and my testimony is along the one question of graphite. Those other questions are something that I had not thought of. The minimum price, however, as I stated originally,

was, in my opinion, a very desirable thing to be in the bill, along with increasing the amount available, and as it appears to me, even with your very plausible argument, I am unable to see in our own business where the thing would particularly apply. Of course if they named a maximum price, one unreasonably low, it is supposed that that could naturally be modified if extraordinary conditions were brought about, say instead of us paying $3 to $5 a day we had to pay $10 or $15 a day for labor, then the same court would be equally fair with us in considering those conditions, because it would thwart the very objects of the measure.

Senator SHAFROTH. But would it not produce a contest immediately if you would fix a certain amount, one man would say, "I can not produce it at that," another man would say, "I can produce it at that."

Mr. CONKLIN. Those conditions would enter into our case—some can produce a little cheaper than others; yes, sir.

Senator SHAFROTH. As a matter of fact, if you stimulate production very much it automatically brings down the price, does it not?

Mr. CONKLIN. Yes, sir.

Senator SHAFROTH. Is it not better really that the lower price so caused from increased production should come to pass automatically than it is to specify what each metal shall sell for?

Mr. CONKLIN. I think it would be impracticable to go to specializing. It would be almost necessary to make this a sort of general application to all the different industries, and I am perfectly satisfied with the minimum price; in fact, as I stated before it would almost answer our purpose in the bill in its present form, but I think there are chances that would be eliminated if it could be modified, say, by raising the amount available and naming the minimum price. It would have a greater tendency to give us a line of credit. For instance, we are carrying now quite a large amount of this product. Well, the banks would have more ground for giving us a line of credit; if there was a minimum price fixed we could intelligently go to them and ask credit on our manufactured product; when it was graded by chemists we would have something that would be an established article to realize on. If there would be a little let-up in the demand it could be carried for a little way and carried safely by the bank as an established credit.

The CHAIRMAN. We might illustrate that point Senator Shafroth was bringing out by referring to some of the testimony that has been brought out at this hearing. You were not present but a producer of tungsten testified that he could produce tungsten at about $25 a ton, I believe, and do well, while in Senator Shafroth's own State I understand he has received word that they could not produce tungsten short of $33.

Senator SHAFROTH. I do not know the exact amount, but they can not produce it at the present price.

The CHAIRMAN. Now, if the witness who testified here could produce it at $25 and the Colorado producer can not produce it for less than $32 or $33, if you set a maximum price of $33, this first producer would be making more out of his product than the Colorado man.

Mr. CONKLIN. Yes, sir.

The CHAIRMAN. Would it not be better to leave that maximum price open and the Government could get it whenever it needed it at the best price? And a minimum price fixed so you might know what you could rely upon, and, as you say, when you go to your banker and explain to him that is the minimum price, and you have this amount of ore to dispose of, that would establish a credit.

Mr. CONKLIN. That would satisfy us entirely.

The CHAIRMAN. You understand, Mr. Conklin, this bill does not provide for the Government buying mines and loaning money directly?

Mr. CONKLIN. Yes, sir.

The CHAIRMAN. The impression has gone out that the Government is going to buy mines and loan miners money.

Mr. CONKLIN. I do not understand it that way at all.

The CHAIRMAN. Let us take up for a moment the price-fixing on wheat, as just brought out by Senator Shafroth and compare it——

Senator BAIRD. Is your material that you are furnishing here as good as this foreign material, at $18 or $20 against $36, you said—is it as good a material for use?

Mr. CONKLIN. That I endeavored to cover yesterday, but I will briefly state for your information that the Crucible Steel Co. of America are one of our best outlets; they have always paid us the highest price for our product, although they require high standards. They are practical crucible men. One of their mining engineers, a chemist, visited our field in Alabama last November and told me, in the presence of several other operators, that a good crucible could be made from all Alabama flake, and that they were willing to modify their mixture so as to adopt its use exclusively provided they could be assured of a sufficiently great quantity that would meet their requirements.

I have just explained to you the position of the Bridgeport Crucible Co. Going a little further, Mr. Macfarland, the manager of the Bridgeport Crucible Co., when I was there a year ago last January, he brought out on his desk a list of reports from their factory superintendent showing the standing of our graphite and complimenting very highly the product of our mill and one or two other mills in Alabama, and he added that he could make a better crucible by adding 25 per cent of our flake than where he used the Ceylon graphite exclusively.

The CHAIRMAN. I might state for the benefit of the members of the committee who were not here yesterday that there was a letter introduced, and which will be printed in the record, showing the grade of this graphite that Mr. Conklin has testified about.

Mr. MACBETH. Mr. Chairman, the report made by the Bureau of Mines and the Geological Survey only mentions graphite occurrences in the West in the States of Colorado, Nevada, and California. I should like to have the record note graphite occurrences in the States of Washington and Idaho. I was in receipt of a letter from a man residing at Tekoa, Wash., who has a 40-acre graphite deposit that he desires to open and market there; and in Idaho I have personal knowledge of a number of deposits, and several in northern Idaho. In central Idaho there is a deposit of graphite, to which I have been, that cuts through the country for at least three miles, and which ranges in width from 15 to 30 feet.

I should like to ask Mr. Conklin a question, too.

Upon establishing a price, either maximum or minimum, would you establish a price that would permit the marketing of the western graphite?

Mr. CONKLIN. Well, we would have no objection to that.

Mr. MACBETH. The reason I ask you that is this——

Mr. CONKLIN. If they would require a higher freight rate we would not suffer if you named a minimum price of say 30 cents, still you would be under the Ceylon.

Mr. MACBETH. The reason I asked you if you would name a maximum or minimum price, if they should market the graphite in the States of Colorado, Nevada, Washington, and Idaho, why you would have enough graphite in Washington to flood the country—those deposits are so extensive.

Mr. BASTIN. May I make this statement? The Geological Survey receives monthly reports of the production of graphite in Alabama, and according to these reports, the average monthly production in that State in 1917 was about 190 tons. That condition of favorable production was maintained, with slight diminution during the first three months of the present year, the production there averaging 168 tons for the first three months, with increasing stocks. During the month of April there was a sudden slump in the Alabama graphite industry, over half of the producing mines and plants closed down, and there was only 50 tons of new production, the remaining 90 tons, making a total for April of 140 tons, was drawn from the stocks. The stocks are therefore being depleted somewhat.

Mr. MUDD. Mr. Bastin has brought out the decreased outlet within the last month or so in Alabama. May I ask Mr. Conklin what is the mill capacity of the present plants?

Mr. CONKLIN. I should say from 12,000 to 15,000 tons.

Mr. MUDD. That would be at a rate not less than 1,000 tons per month?

Mr. CONKLIN. Yes, sir.

Mr. MUDD. Whereas they have only been able to find a market and continue operating at the rate of 150 tons a month, we will say?

Mr. CONKLIN. And in bringing out that point I think there is another thought that is very plausible. I am glad Mr. Mudd raised that question. These developments in Alabama have been made by small interests, under the encouragement of a market that through fears of their inability to get the foreign product came in as active bidders for our graphite, but as soon as the foreign product was again available they again apparently are using every effort—when I say "they" I do not mean all of them, because there are exceptions—but some of them, especially some having foreign interests of their own, are using every effort to discourage our market and discourage the production.

The CHAIRMAN. Why?

Mr. CONKLIN. Well, some with foreign interests, it is evident they are trying to defend their own interests abroad.

The CHAIRMAN. You refer to those who have interests in the Ceylon fields, do you?

Mr. CONKLIN. Yes, sir. Others through their obstinacy in undertaking modifications of their mixtures. That was rather pertinently

set out in that Atlantic terra cotta letter, where they took the position, explain it themselves, that the other fellows were hanging to old traditional methods, and that they were sure that their laboratory tests and that their experiments were far in advance of the methods of some if not practically all the old producers. That is a new manufacturer.

Mr. MUDD. If present conditions continue, will the Alabama producers be able to keep up the current production?

Mr. CONKLIN. No, sir.

Mr. MUDD. Or will the industry continue to languish and finally cease?

Mr. CONKLIN. It will languish and practically go out of business, as nearly as I can see it, unless there is some relief.

Mr. MUDD. Then at a later time, if shipping conditions should make it necessary for us to really act upon our domestic supply, there would be a considerable delay before that industry could be restored?

Mr. CONKLIN. Yes; there would be a great delay, and it is doubtful whether under present conditions you ever could get it back because our help is a great element in our ability to produce, and if this help once got away from there, it is very hard to get it back again.

Mr. MUDD. In other words, if you do not get some assistance now that industry may be extinguished in a way that will practically make it impossible to be restored in case of some great emergency at a later date?

Mr. CONKLIN. Yes, sir.

Mr. BASTIN. May I state that at an informal conference a few days ago by those interested in the graphite situation from the Government standpoint, including representatives of the Shipping Board, mineral advisers, the War Trade Board, the War Industries Board, the Geological Survey, and the Bureau of Mines, this matter of the Alabama industry was discussed, among other things, and there was apparently no way that could be seen of rendering governmental assistance in this situation except to suggest to the crucible makers, an assembly of manufacturers who are in many respects very conservative, that they should get together voluntarily, form an association, and agree to use a certain minimum proportion of domestic flake graphite along with the imported product.

That is as far, apparently, as any action at the present time can go. That matter is now under advisement, whether such request shall be sent out. If it should be sent out and should not meet with a favorable response, there would apparently be no means of getting action in this situation.

Mr. MUDD. Mr. Conklin, approximately what stocks are being carried by mining companies in Alabama which are unsold?

Mr. CONKLIN. I should suppose it would run some place near 800 tons. I believe it is under 1,000 tons.

Mr. MUDD. About 1,000 tons, then, on hand, which they have not been able to dispose of?

Mr. CONKLIN. A little less than that. I think there has been a reduction. Had the production kept up with the amount of sales, that would have been increasing, but the production has been discouraged, so that they are not keeping pace. We are shipping

commitments on old contracts. All that we are shipping is on old contracts, executed last year.

Mr. WHITE. What is the value of that thousand tons of mineral that is held in the producers' hands?

Mr. CONKLIN. At last season's prices, I should say that would average 15 cents a pound.

Mr. WHITE. Do any of the consumers—the large consumers—of graphite operate or produce domestic graphite?

Mr. CONKLIN. Yes, sir. I understand the Joseph Dixon Crucible Co., of Jersey City, N. J., do.

Mr. WHITE. Is that the flake product?

Mr. CONKLIN. Yes, sir.

Mr. WHITE. And presumably is suitable for crucible?

Mr. CONKLIN. Yes, sir. We have an investment in our own county of $200,000.

Mr. WHITE. The presumption would be that if at least one consumer has gone into domestic production that the material would be recognized as suitable by crucible companies and by the companies thus producing.

Mr. CONKLIN. That would be a natural inference.

The CHAIRMAN. Is that all?

Mr. WHITE. There is one other factor in which I am interested. How long would it take to develop any of the graphite mines and build the necessary mill and finishing plant to produce flake graphite? About how many months would it take?

Mr. CONKLIN. I was about nine months in building my property, and I was credited with getting through in about as short a space of time as any of them. Now, it undoubtedly would require more time, owing to delays in getting deliveries and labor troubles.

Mr. WHITE. Then, as to any new locality, in order to develop graphite, it would take nine months as a minimum before you would get a new production?

Mr. CONKLIN. Yes, sir.

Mr. WHITE. I just asked the question, Mr. Chairman, to bring out the prime element in connection with the uncertainty of importing and the necessity for further increases of the domestic product from new sources. It is a thing that ought to be developed after a great deal of forethought, if it should be found necessary, not only to produce new material from new sources, but increase the output of the existing deposits.

The CHAIRMAN. Are there any further questions?

## STATEMENT OF MR. D. F. HEWETT.

The CHAIRMAN. Mr. Hewett, what department are you connected with?

Mr. HEWETT. I am a geologist in the United States Geological Survey in charge of manganese investigations and the collection of manganese statistics.

The CHAIRMAN. How long have you been in charge of that work?

Mr. HEWETT. Since November, 1912.

The CHAIRMAN. What was your business before you took up this work in 1912?

Mr. HEWETT. After graduating from college from 1903 to 1909, I was a mining engineer with a firm of consulting engineers in Pittsburgh. From 1909 to 1911 I was a graduate student in geology at Yale University. In 1911 I came here and entered the Geological Survey.

The CHAIRMAN. We will refer, first, Mr. Hewett, to the production of manganese ores in the United States. What are the productive areas of manganese ore in the United States?

Mr. HEWETT. The manganese ore occurs in a great many parts of the United States. For the five years prior to the war the average production of ore with more than 40 per cent manganese was about 2,600 tons annually, which came largely from mines of Virginia, one in South Carolina, several in Georgia, several in Arkansas, and several in California.

Since 1914 the production has risen to 120,000 tons in 1917. Of that 60,000 tons came from one district in Montana, 12,000 tons from California, 12,000 tons from Arizona, 8,000 tons from Arkansas, 12,000 tons from Virginia, and sundry small quantities from deposits in other parts of the United States.

About 70 per cent of the production in 1917 came from mines west of the Rocky Mountains, probably 80 per cent of which were not known prior to 1914 as possible sources of production. In other words, while the production of the Eastern States has increased so that it is now roughly 35,000 tons—that was the amount in 1917, and that includes Arkansas—the greater part, or nearly 70 per cent of the production, now comes from the region west of the Rocky Mountains.

The CHAIRMAN. What has the recent trend of production in the important districts?

Mr. HEWETT. In Montana there was no production recorded prior to 1916, when 4,000 tons were produced. In 1917, 60,000 tons were produced.

In Virginia about 12,000 tons were produced in 1917, as against various quantities ranging from 1,000 to 4,000 tons for the previous six years.

The production of Arkansas—I speak now of ores with more than 40 per cent manganese—was negligible for several years prior to 1914, although from 1887 to 1900 there was a fair annual production. Since then it has risen to 6,000 tons in 1916 and 8,200. There was no production in Arizona prior to 1914. It has risen to 12,000 tons in 1917.

The California production of 12,000 tons in 1917 represents an increase from nothing in 1914, so that you might say that in the western districts the production has increased tremendously, while in the eastern districts it has increased considerably, but there was no striking increase from 1916 and 1917.

The CHAIRMAN. Has there been any production in Nevada?

Mr. HEWETT. There was no production in Nevada prior to 1916. The State of Nevada produced in 1917 about 3,000 tons, one-third of which came from one mine discovered in the summer of 1917.

The CHAIRMAN. What classes of companies or individuals are now mining manganese ore, both high grade and low grade?

Mr. HEWETT. I have in my pocket a list which I have compiled showing the production of those companies which produced more

more than 2,000 tons in 1917. There are 12 companies which produced 70,000 tons out of 120,000 tons in 1917. Of those 12, 6 owned prior to the war the property from which they now ship, and operated the properties for other metals than manganese. For instance, the Philipsburg Mining Co. is an association formed out of the officials of the Granite Bi-metallic Mining Co., to operate the manganese deposits. The Granite Bi-Metallic Co. has owned the properties for 30 years in the Philipsburg district and has shipped gold and silver ores.

Another illustration of the same type is the Bunker Hill Mines Co. of the Phelps-Dodge Corporation which owns the Tombstone group of mines.

That accounts for six of the big producers of 1917. Of the remainder, three represent aggregations of those that were previously attempting to operate on manganese products, one is a producer of ferroalloys, that has gone into mine operation since the war began. As to another I have not the complete details. The last is a man who made an exceptional discovery in Virginia.

In other words, 60 per cent of domestic production came from 12 mines, most of which were owned by companies or individuals who happened to own the properties at the time that the demand came.

As the total number of producers is actually 133, 121 producers shipped the remaining 40 per cent of domestic production. They represent production all the way from a few tons to a thousand tons. There are a number of small companies that are trying to make a go of the industry on the basis of a production of less than a thousand tons, with output valued at from $20,000 to $50,000.

The CHAIRMAN. How much manganese ore of both grades do we use each year in the United States?

Mr. HEWETT. In 1917 the imports of manganese ore were 630,000 tons high grade. The production was 120,000 tons. We imported 45,000 tons of ferromanganese, roughly equivalent to about 110,000 tons of manganese ore, making approximately 860,000 tons of high-grade ore. There is reason for believing that stocks increased during 1917 so that probably around the 800,000 tons were needed.

The CHAIRMAN. Of the 800,000 tons, we have only produced 120,000?

Mr. HEWETT. Yes, sir.

The CHAIRMAN. Do you consider that the industry is on an established basis now?

Mr. HEWETT. By established basis I presume you probably have reference to a basis that will encourage sound companies with competent technical advisers to enter into production. At the present time the 12 companies that produced 70,000 tons have a fair financial standing. Several have not very elaborate technical staffs, and do not attempt to go into a number of matters of technology that affect economic mining and efficient treatment. I should say that the industry right now is not an established industry. In other words, it is not attractive to groups of financially stable individuals.

The CHAIRMAN. Before the war most of the manganese ore of both grades used in the United States was imported, was it not?

Mr. HEWETT. Roughly, one-half of the needs were imported in that form of ore and the other half in the form of ferromanganese made from foreign ore in England.

The CHAIRMAN. Are there any ore-producers' associations in the manganese industry?

Mr. HEWETT. So far as the Geological Survey can find, there is no association of producers in the manganese industry. There have been informal gatherings of producers recently in the Philipsburg district. There is no producers' association in the United States, far as we can ascertain, of any grade of ore.

The CHAIRMAN. From your study of this matter, you feel, do you not, that it is necessary to take some action at this time in order to make this country self-sustaining in manganese ore?

Mr. HEWETT. At this point I feel that it is appropriate to mention the relation between the use of and need for high-grade ore and the use of and need for low-grade ore. The high-grade ore ranges from 40 per cent up and the low-grade ore from 5 to 40 per cent. The Survey and the Bureau of Mines, have fair knowledge of the reserves of domestic mines, and I believe it is impossible, from visible sources, to imagine a production in excess of from four to five hundred thousand tons under any conditions. In other words, the United States can not be self-supporting.

The CHAIRMAN. There will have to be more or less importation of this ore?

Mr. HEWETT. Of high-grade ore; yes. I omitted to say, in connection with the trend of production, that prior to the war the production of ores of from 5 to 45 per cent ranged from 50,000 tons to 60,000 tons, none of which was used to make spiegeleisen. There was about 110,000 tons of zinc residuum produced, of which the gentleman representing the Lackawanna Steel Co. spoke on Monday morning. I believe it was Mr. Burnett and Dr. Waterhouse.

The production of that grade of ore had increased in 1917 to about 450,000 tons, and the prospect for 1918 is about 900,000 tons.

Prior to this year there has not been a demand for low-grade ore equal to the capacity of the mines to produce. At the present time the visible production in the principal districts is largely taken up for the remainder of this year. In other words, what may be the capacity of domestic mines for fulfilling the needs depends upon the balance to be struck between the use of low-grade and of high-grade ores.

As to reserves, there is no doubt that if the known reserves can be used, the United States possesses about four years' supply. We have figured by States and by grades for many deposits. There is no doubt that there is a visible supply of low-grade material for possibly four years; that is, enough to meet all the demands of the steel industry, if it is usable. The question that Mr. Waterhouse raised remains open: To what extent is it usable? That is a matter of technology as to which I am to-day largely dependent upon information from and conferences with the Bureau of Mines.

The CHAIRMAN. Does any member of the committee wish to ask any questions upon the question of production in the United States? If not, we will go to another subject.

Mr. MACBETH. I would like to ask a question, with your permission.

The CHAIRMAN. Certainly.

Mr. MACBETH. Mr. Hewett, have you examined the deposits of Clark County, Nev.?

Mr. HEWETT. I have not. One of the geologists of the Survey is now in northwest Arizona and will visit that county in June.

Mr. MACBETH. There is a deposit in Clark County that is now shipping 150 tons a day of 40 per cent ore, containing 11 per cent silicon, and the owners of it state that they expect to increase that output to 300 tons. If they do, it will mean that that one county will produce as much high-grade manganese as the entire United States produced in the year 1917.

Mr. HEWETT. The preliminary records of production of that mine for the first quarter of 1918 show 2,800 tons.

Mr. MACBETH. They now have it on a 150-ton-a-day basis. I will state that there are other deposits of manganese in the West which seem to have escaped the attention and examination of some of your men. There is one in the State of Idaho that has an offshoot in the neighborhood of 300 feet in length, and that is from 6 to 10 feet in width. Did you see that?

Mr. HEWETT. That is also on the itinerary of one of the geologists.

Mr. MACBETH. There is also an exceedingly large deposit in the Clearwater district in the forest reserve, which is stated by the engineer to be the largest deposit in the West of high-grade manganese.

Mr. HEWETT. I have no record of that.

Mr. MACBETH. There are also other large deposits that I will not take the time to mention now.

The CHAIRMAN. Take up the reserves. Where are the principal reserves of manganese ore in the United States, high grade and low grade?

Mr. HEWETT. As a result of the combined work of geologists in the Survey, the California Council of Defense, and the Minnesota State Tax Commission, it has been possible to gather data bearing upon the reserves of manganese ore. It has been impossible to assign figures that are highly dependable to the States of Virginia, Tennessee, North Carolina, Georgia, and Arkansas.

On the other hand, what we consider to be fairly dependable estimates have been made for most of the States in the Rocky Mountain region, excluding Nevada, Utah, Idaho, and Oregon, because adequate data is not yet available from them. Data from possibly 200 deposits within 15 or 20 States indicate a probable reserve of about 250,000 tons and a possible reserve of about 500,000 tons of material in excess of 40 per cent. I might say that as a measure of manganese deposits in general very few mines to-day in the United States have been able to explore far in advance of production. An illustration of that is in the Philipsburg district. In August, 1917, there were 17 properties opened, and 97 estimates showed 135,000 tons of probable ore and 350,000 tons of possible ore. Since that time there has been shipped from 22 deposits about 60,000 tons of ore. I feel sure, from correspondence with producers, that the visible supply is nearly twice that which was estimated in August, 1917. In other words, exploration is carried on very slightly in advance of needs. It has been impossible for the average producer to explore in advance of what he actually mined.

The CHAIRMAN. To what extent are the areas of reserves your sources of production?

Mr. HEWETT. The production to date, or about 80 per cent of the production to date, is coming from deposits that are included in these estimates. There is sundry other production concerning the sources of which we have no adequate knowledge. There are possibly 12 or 15 dependable sources of quantities ranging from 10,000 to 100,000 tons. I say "probably" because they are not confirmed; that is, they are not now sources of production. I should say, with regard to reserves of low-grade ore with more than 10 per cent manganese, that the estimates for the Leadville district in Colorado, the Cuyuna Range in Minnesota, Silver City district in New Mexico, the Pioche district in Nevada, and the Red Cliff district in Colorado, indicate a total of about 17,000,000 tons of an average grade of about 15 per cent. Of that 11,000,000 tons contain more than 12 per cent phosphorus. There are about 5,000,000 tons of material between 10 and 25 per cent manganese and less than 12 per cent phosphorus. Of those districts that I have mentioned, no ore is now being shipped from the Pioche district, Nev., and Red Cliff district, Colo., as a source of manganese alloys. There is being shipped from the Pioche district, however, 120,000 tons annually to smelters for flux.

The Cayuna district shipped in 1917 about 450,000 tons, whereas the reserves are in the neighborhood of 15,000 tons. In other words, the reserve in the Cuyuna district is not being drawn on very vigorously.

The CHAIRMAN. Take the matter that Mr. Macbeth brought up. He speaks of large deposits of manganese ore in Idaho. Do you know whether that supply is now being mined?

Mr. HEWETT. As to the first deposit that Mr. Macbeth spoke of, near the Payette River, the owners are now making an effort to mine it. It is in an exploratory stage. There is no mill on the property, but the owners are having concentration tests made. I know nothing about the size of the deposit. As to the other one, so far it is not a source of production, although it may be undergoing exploration.

The CHAIRMAN. What factors appear to hinder the utilization of these reserves that you have referred to?

Mr. HEWETT. That is a very large question. I feel that my part in that purely relates to price. There are matters of usage that come distinctly within the province of metallurgists, such as members of the Bureau of Mines. As I see it, the market for Cuyuna Range, Minn., ores has been away below the capacity of the mines to produce until the last few months, when, coincident with the shutting off or the reduction of imports of high-grade ore by the Shipping Board, the visible production for 1918 was quickly contracted for.

The CHAIRMAN. When you speak of prices, what has been the trend of prices from 1914 to 1917, and to date?

Mr. HEWETT. The price for high-grade ore ranged from 1909 to 1914 from 22 to 26 cents per unit for 49 per cent ore. That is equivalent, approximately, to $11 to $13 a ton prior to 1914. It rose to 55 cents in 1916, and in August, 1917, to $1.20, and has kept at that level until within the last month. I speak now of the prevailing price for domestic ore f. o. b. Pittsburgh.

Since the war a company in Chicago has been aggressive in the purchase of domestic ore and has offered about the same prices less the difference in freight rates, with a higher limit for such impurities as silica. The price for low-grade ore has risen, perhaps, 50 per cent. It is very hard to get at the exact details of prices for Cuyuna Range ores, but I should say that the average price is 50 per cent higher than it was in 1914.

The CHAIRMAN. What is the high-grade ore selling for to-day; do you know? I mean per ton.

Mr. HEWETT. There are a number of contracts, of course. I am speaking of prices offered on contracts at the present time, and not spot prices. The price ranges from $52 a ton at Chicago for 49 per cent domestic ore to $1.35 per unit, or $65 per ton, for imported ore, at Pittsburgh. In other words, there is a difference between the price offered for the same grade of domestic ore at Pittsburgh and Chicago, as well as a difference between foreign and domestic.

The CHAIRMAN. To bring that point out, I will ask you whether the price is the same for domestic and foreign ore of the same grade?

Mr. HEWETT. So far as the Geological Survey can get access to information, the price is not the same.

The CHAIRMAN. Do you know what the difference is?

Mr. HEWETT. In November one steel company was offering for new contracts—this was November, 1917, and this information comes from a conversation with a purchasing agent—$1 per unit, or $49 per ton for domestic ore, and $1.20 per unit, or $60 per ton for imported ore. It was stated that the difference arose out of the difficulty in securing large quantities of domestic ore and the increased difficulties in settlement, and sampling.

The CHAIRMAN. What has been the local effect of the recent increase in prices?

Mr. HEWETT. It has had the effect of bringing out a most extraordinary production in some of the western regions, particularly at Philipsburg, Mont., in parts of Arizona, in part of California, but the recent increases have not greatly affected the production of Virginia, Arkansas, and Georgia.

The CHAIRMAN. What production is expected in 1918 at present prices, if you know?

Mr. HEWETT. A preliminary estimate based in part upon opinions of operators and in part the field agents of the Survey and the Bureau of Mines, about 120,000 tons for the first 6 months, with a probable minimum of 225,000 tons for 12 months. With favorable transportation conditions that may go to 275,000 tons in 1918.

The CHAIRMAN. That will still leave us far behind the amount needed, will it not?

Mr. HEWETT. It will; yes, sir.

The CHAIRMAN. What would be the effect on local prices if the prices ranged from 25 to 50 per cent higher than those that now prevail for high-grade and low-grade ore?

Mr. HEWETT. As near as I can get at it, in the Philipsburg district there is a fair profit being realized on ore now; and while production would probably increase, as I see it, the maximum production will come forth at present prices.

In Arizona it will have the effect of considerably increasing production. In southeast California it is probable that from one mine

alone 10,000 to 15,000 tons would come out that can not now come out on account of the cost of transportating it to the railroads and to points of consumption.

In Arkansas I should say that an increase in price ranging from 25 to 50 per cent would probobly double the prduotion.

In Virginia it will probably double production within a year; that is, the rate of production would probably be doubled within a year. In other words, I rather suspect that if prices were slightly higher, production would increase possibly 50,000 or 100,000 tons, but that is a small part, as I see it, of the factor affecting increased production.

The CHAIRMAN. Can the United States supply the present needs for high-grade ore at any reasonable advance in price?

Mr. HEWETT. It can not.

The CHAIRMAN. It can not?

Mr. HEWETT. No. I may say that if a slightly higher uniform price were offered, it would certainly increase the production of the Philipsburg district slightly, but it would bring about certain labor troubles that would hinder production. Labor troubles would be brought about that would more than offset the stimulation of production.

For, it would appear if the maximum production of ore is needed, that there should be a regional, local, or State price, as against a uniform domestic price.

The CHAIRMAN. Do any members of the committee wish to ask questions about the price? If not, we will take up the question of allocation. How much high-grade ore was available in 1917?

Mr. HEWETT. I think I brought that out a few minutes ago. About the equivalent of 860,000 tons was actually available—imports of ore alloys and production of ore.

The CHAIRMAN. I did not understand that was all high grade.

Mr. HEWETT. That is the equivalent of high grade.

The CHAIRMAN. What part was imported as ore, or as low grade?

Mr. HEWETT. I think I referred to that. About 45,000 tons of ferromanganese, equivalent to about 110,000 tons of ore, was imported. Also, 630,000 tons of ore were imported and 120,000 tons of ore were produced.

The CHAIRMAN. Do all makers now use domestic ore?

Mr. HEWITT. I may say that prior to 1917, in addition to the collection of statistics from producers of ore, the survey also collected

Mr. HEWETT. I may say that prior to 1917, in addition to the spiegeleisen. There were two producers of ferromanganese and three of spiegeleisen in 1913. In 1917 there were 16 producers of ferromanganese and, I think, 9 or 10 of spiegeleisen. So that of the 16, 11 used some domestic ore, while 5 did not use any domestic ore. It will aid the work of your committee, perhaps, if I show you a map showing the location of furnaces, the regional consumption of ore, and the regional distribution of domestic production. It has some bearing upon the transportation problem.

The CHAIRMAN. You have that map right here?

Mr. HEWETT. Yes, sir.

The CHAIRMAN. Suppose that is reduced and put into the record.

Mr. HEWETT. There are a number of problems that such data will aid in understanding. I rather suspect that there are members of the Bureau of Mines who would wish to elaborate on that, or use it.

The CHAIRMAN. We will not put it in now, then. We will keep it until later.

What classes of makers are the largest users of domestic ore?

Mr. HEWETT. That involves a little history of the ferroalloy industry. As I said, there were two producers of ferromanganese in 1913 as compared with 16 in 1917. Most of those new makers represent men who have leased idle blast furnaces. Now a few companies, possibly three or four, have been very aggressive in searching for and using domestic ores. Several other companies have accepted what has been available to them, but you might say that fully 80 per cent of the domestic production has been absorbed by four new makers, makers that have entered the business since 1914.

The CHAIRMAN. Do they also use foreign ore?

Mr. HEWETT. So far as the records of the survey show, there is only one plant making ferromanganese in the United States that used only domestic ore in 1917. Five out of the 16 use only foreign ore.

The CHAIRMAN. Have the consumers in the past made the best use of the high-grade ore imported by them?

Mr. HEWETT. That is a question that I rather suspect a metallurgist could best answer. It might be worth mentioning that one firm or one company has for a number of years utilized Brazilian high-grade ore in making spiegeleisen. This practice was continued through 1917, although an appeal was made to a high official of the company by the Director of the Survey in August, 1917, calling attention to the fact. However, no answer was ever received to that letter. It was acknowledged by one official and referred to another, but no action was ever taken. There is good reason for believing that that is not good practice; that it is not wise at the present time. I simply speak of that as evidence of the fact that the best use is not being made of some of the imported high-grade ore.

The CHAIRMAN. Are foreign ores necessary in making high-grade ferromanganese?

Mr. HEWETT. That, again, is a question, of course, that should come within the scope of metallurgists. So far as I have been able to ascertain from my contact with several allow makers, the average grade of imported high-grade ore is lower in silica and more desirable for furnace use than domestic ore. In fact, the average composition of domestic ore is about 42 per cent manganese and 12 per cent silica. Now, it is stoutly maintained, and appears to be true, that to make normal grades of ferromanganese some imported high-grade ore is needed by them all. Some makers of ferromanganese have apparently been unable recently to get their needs in high-grade imported ore.

The CHAIRMAN. As it is about 12 o'clock, we will adjourn until 2 o'clock, and meet over in the Public Lands Committee room in the Capitol Building. Mr. Kelley, of New York, is here and wishes to be heard, as he has some other business to transact.

(Thereupon, at 12 o'clock noon a recess was taken until 2 o'clock p. m. of the same day.)

AFTER RECESS.

The committee reassembled, pursuant to the taking of recess, at 2 o'clock p. m., in the room of the Committee on Public Lands, Capitol Building.

## STATEMENT OF MR. CORNELIUS F. KELLEY, NEW YORK CITY.

The CHAIRMAN. Mr. Kelley, in what business are you engaged?

Mr. KELLEY. I am an officer and director of a number of mining companies. My principal occupation is vice president of the Anaconda Copper Mining Co.

The CHAIRMAN. How long have you been connected with the Anaconda Copper Mining Co.?

Mr. KELLEY. About 18 years continuously.

The CHAIRMAN. Do you handle any particular branch of the business?

Mr. KELLEY. I have, with my associate officers, charge of all operations of the company.

The CHAIRMAN. At whose request do you appear here to-day?

Mr. KELLEY. In response to a telegram from yourself.

The CHAIRMAN. Have you examined the bill that is under consideration by the committee?

Mr. KELLEY. I have, as I understand it. I have a copy of the bill marked "House of Representatives 11259."

The CHAIRMAN. That is the one. Will you just give us your opinion as to the needs of such legislation?

Mr. KELLEY. Mr. Chairman, I want to preface my remarks by saying that I am not opposed to anything that makes for the production of metals essential to the carrying on of the war. As a matter of fact, I think that the mining interests have had as keen an appreciation of their duty in that respect as probably any group of citizens in the country. We realize that fundamental differences of opinion concerning the methods that should prevail should give way to whatever is the concensus of opinion, as most likely to bring about the desired results in the shortest possible time.

Before discussing the detailed provisions of this bill the first question that arises, it seems to me, is as to the policy of enacting legislation. There is no doubt that if legislation is to be enacted to regulate and control the mining industry, or any part of it, it should be based upon the necessities of the situation. I do not think in ordinary times that a proposal to enact such a law as the one we are considering would receive serious consideration because of the character of the act itself and the many drastic provisions contained therein. So that we may adopt the fundamental premise that this bill is the offshoot or offspring of the necessity of the situation, in the opinion of those who have proposed it.

I want to say that so far as the administration officials who are behind this bill are concerned, there is no question that they enjoy the fullest confidence and highest respect and esteem of the mining profession and the mining industry. We think in that respect we have been particularly fortunate in the Bureau of Mines directorship, both in its initial stages under Dr. Holmes and its subsequent

development under Dr. Manning. It is, therefore, Mr. Chairman, a matter of rather grave concern to me to be obliged to take a position that is diametrically opposite to that proposed by the proponents of this bill.

In taking that position I do not wish you to feel, and I do not wish these gentlemen to feel, that I am doing so from any desire to enter into a controversy about the matter. You have asked me to come here. I did not solicit the occasion, but I should feel that I was doing little less than my duty if I am not perfectly frank in my expression of opinion regarding this measure. I hope that whatever difference of opinion there may be between myself and the many estimable gentlemen who have supported this measure, it will be regarded as frank difference of opinion, and that I shall be accorded the same degree of credit for honesty of purpose as I am perfectly willing to and frankly give to those who have supported it so earnestly.

Now, Mr. Chairman, there is no doubt in the mind of anybody that this bill originates out of the assumed necessity for developing a domestic production of minerals in order to relieve the shipping situation. If that is not the purpose of the bill, then I have been unable to find disclosed in the records the true purpose of the bill. It certainly can not be that the Bureau of Mines or the Geological Survey are seeking, merely for the purpose of extending their regulatory control or building up an extension to the bureau, the enactment of this measure.

We realize, and I think I have had as much opportunity for realizing it during the past three years as most men, the very great shortage of and the very great difficulty in providing bottoms to carry on the ordinary commerce of the world, due to the military necessities of the situation. It therefore resolves itself into this proposition: Is this bill justified by the shipping situation? To what extent will it relieve that situation, and is it the best means of developing domestic production in this country?

Those, I believe, are fundamental principles from which there can be no departure in a frank discussion of the measure.

The bill is designed to relieve the shipping situation, provide for domestic production by doing certain things, and the primary thing that is sought to be accomplished, we are told, is the stimulation of the mining industry.

Now, Mr. Chairman, I have read with some degree of interest the record that has been made in this case, and one would think that the mining industry had been dormant, perhaps culpably so, in this very grave situation, and that it needed the stimulus of a revolving fund of $10,000,000 which is now provided in order to bring it into activity and develop the resources of this country. To me that position is best answered by looking the situation squarely in the face as it maintained in 1914 and as it maintains to-day.

I have gone through the list of metals and minerals that are specifically enumerated, and I shall discuss the details of the bill later. I have endeavored, Mr. Chairman, to find out what the situation was with respect to those particular metals or minerals that run into tonnage figures, because, reverting to our first principle, if it is a shipping proposition that matter naturally is of most interest to us.

In going through the record I found in a document that was submitted to the House, and which is part of the Congressional Record of April 23, at page 592, some intensely interesting figures are presented that speak eloquently of the activity of the mining industry.

Take, for instance, the item of chromium. In 1914 there was produced in this country 591 tons. In 1917 there was produced 42,682 tons. The imports in 1914 were 74,686 tons; in 1917, 72,063 tons. That is an indication of the tremendous increase in the steel-making industry of the country.

Corundum is reported last year as being only 17 per cent dependent upon imports. In 1914 we produced in this country 485 tons of corundum; in 1917, 16,062 tons.

Senator POINDEXTER. Can you tell us the tonnage of corundum that is imported?

Mr. KELLEY. The total tonnage?

Senator POINDEXTER. Yes, sir. Can you tell where it came from?

Mr. KELLEY. I can refer to that.

Senator POINDEXTER. I will not interrupt you to look it up now. I thought, in view of your very interesting analysis of the issues here, and in view of your statement with reference to shipping, that I would like to know how much shipping is required.

Mr. KELLEY. I will tell you in a moment.

The principal importation was from Greece. Prior to the war it was from Greece and from India. As I say, we produced in 1914, 485 tons, while we produced in 1917, 16,062 tons.

Our imports in 1914 were 15,349, and they dropped last year to 2,287 tons.

Ferrosilicon statistics show that we were absolutely independent, 100 per cent independent, last year, of imports. In 1917 we produced 160,000 tons, and we only imported 9,740 tons. The previous figures are not reported in the document to which I have referred.

In fluorspar last year we were 94 per cent independent. In 1914 we produced 95,116 tons in this country, and last year we produced 195,000 tons. In 1914 we imported 10,205 tons of fluorspar, and last year 13,614 tons.

In fuller's earth we are 92 per cent independent. Last year the domestic production increased from 40,981 tons to 75,000 tons. Those are the 1917 figures as against the 1914 figures.

In graphite last year we were 25 per cent independent. In 1914 there was produced 4,775 tons of graphite, and we imported 21,990. In 1917 there was produced 8,558 tons, while 42,000 tons were imported.

The gentlemen who testified this morning with reference to the graphite situation threw an illuminating side light upon it when he explained his inability to fill his contracts because of his inability to secure cars for shipment. It is rather difficult to perceive, Mr. Chairman, how the provisions of this bill would have helped out that situation. He had an order which he says was a profitable order at a profitable price, and one with which he was entirely satisfied, but on account of inability to furnish cars for domestic transportation, the steel companies, or the crucible companies, preferred to secure their importations from shipments from abroad.

Grinding pebbles is another item that is enumerated here. No definite data of imports or domestic production are given.

Steel balls are quite universally used, not only as substitutes, but in preference to the importation of pebbles for fine grinding.

As to magnesite, we were independent last year 90 per cent. In 1914 we produced in this country 11,293 tons. In 1917, that had increased to 310,000 tons. We imported in 1914 127,000 tons, and last year we only imported 18,400 tons.

In manganese, in 1914, there was produced 8,708 tons in this country. That is, grade A. Last year we produced 113,734 tons. In 1914, of grade B, there was produced 81,540 tons. Last year that had increased to 423,967 tons. Of grade C there was produced in this country, in 1914, 17,276 tons, while in 1917 there was produced 512,000 tons.

Senator WALSH. What is the basis of those grades?

Mr. KELLEY. Grade A, I think, is from 41 per cent up. I do not know how B is divided.

Mr. HEWETT. It is 15 to 40, and 5 to 15.

Mr. KELLEY. These figures I am taking from a document introduced into the Congressional Record on April 23, at the time of the report of the House committee.

Senator POINDEXTER. Who prepared it?

Mr. KELLEY. It was prepared by the Geological Survey or the Bureau of Mines at the direction of the House committee. The purpose for which I am referring it, I will say for the benefit of Senator Walsh, who was absent, is to illustrate the nonnecessity for this proposed regulatory measure, so far as the stimulation of the mining industry is concerned, and the purpose being, further, to demonstrate that exactly what has happened in lead, in zinc, and in copper, has happened with a rapidity that is most remarkable in all these minerals where the potentiality of production exists. If we come to the fundamental premise upon which this legislation is based, to wit, the necessity for developing a domestic supply in order to relieve the shipping, which is the great hazard of this Nation, as we all know, it becomes pertinent to inquire to what extent, under the operation of natural economic laws, that situation has already been partially remedied, and how far it is on the way to being remedied.

Senator POINDEXTER. Have you similar information in regard to the other alloys that enter into steel, high-grade steel?

Mr. KELLEY. Yes, sir. I have given you some of the principal ones here.

Now, to continue the list, I have taken those articles which represent the big tonnage in the bill, irrespective of whether they were alloys or whatnot, you understand.

The CHAIRMAN. Pyrites?

Mr. KELLEY. In mercury the production last year was 120 per cent. There is not a shortage of mercury in this country. So far as potassium is concerned, the supply was from Germany.

Senator WALSH. It seems to me that in the House hearing there was testimony which left on my mind the impression that our mercury supply was in peril.

Mr. KELLEY. Two or three years ago, Senator, it was quite generally believed that there was to be a shortage in mercury, and that

operations dependent upon its use would be threatened, the price increased rapidly, but production increased and a decline in price followed. We are actually exporting mercury. Last year, I think we did, and the year previous.

Senator WALSH. I simply speak from my recollection of the testimony.

Mr. KELLEY. As to potassium, of course, if we had all the ships in the world we could not get that element, or the material, because we would have to send to Germany for it.

The question of pyrites has been very greatly discussed.

Senator WALSH. Before you pass to that, what figures have you on domestic production?

Mr. KELLEY. The domestic production is very slight.

Senator WALSH. I mean, rather, as to the growth of domestic production.

Mr. KELLEY. I do not think there is any substantial production of potash in this country. We have looked into the question in a number of localities, and if there is a substantial production, I do not know anything about it.

The CHAIRMAN. How about Nebraska?

Mr. KELLEY. I do not know. I understand it is urged that from alkaline salts and other materials in Nebraska a substitute product can be found that can build up production, but I do not know that.

Senator POINDEXTER. Don't they get the potassium in Searles Lake, Cal.?

Mr. KELLEY. I do not know. I am giving the figures from this document.

Senator POINDEXTER. The situation in Searles Lake, as I understand the situation, depends upon legislation.

Mr. KELLEY. That is, there is none.

Senator WALSH. Looking to the disposition of the nonmetallic mineral lands dealt with by the so-called Walsh-Pittman bill, the speedy passage of that bill would go very far toward a solution of the passing situation. I am pleased to say that while I was in California last winter I learned of some deposits in the State of Nevada, just across the California line, that promised a more prolific supply than Searles Lake even, so that so far as potassium is concerned, we have it, and production simply awaits the enactment of legislation for the disposition of the land.

Mr. WHITE. The document which you have there is the same one referred to under the head of "Potassium" and indicates that in 1917 we produced, roughly, 10 per cent of our normal prewar requirements. That shows a considerable increase, because from practically no production before the war we are now producing one-tenth.

Senator WALSH. Where does that come from?

Mr. WHITE. From Searles Lake and from Nebraska. It also comes as a by-product from cement plants in Utah and from the treatment of alunite deposits, as well as a number of other miscellaneous sources.

Senator POINDEXTER. Where do you get the imports from?

Mr. WHITE. The normal imports came from Germany. I do not know just where the small imports, such as still remain, of 11,000 tons came from.

Senator POINDEXTER. I understood you to say we produced 10 per cent of our consumption. That would leave 90 per cent to be obtained elsewhere, and it has not been obtained.

Senator WALSH. Ten per cent of our prewar consumption.

Mr. WHITE. We are going without 90 per cent because we can not get it from Germany. There is a prospect of these other sources developing, particularly from the by-product of the cement plants.

Mr. MUDD. The survey of the possible extraction of potash as a by-product from cement plants indicates that there is available from that source alone 70,000 $K_2O$, if that industry is developed.

The CHAIRMAN. This statement that I have here [indicating] shows that the domestic production in 1917 reached 26,372 and the imports for 1917 were only 11,986 tons, as compared with 3,000,000 tons in 1911.

Mr. KELLEY. The reason I gave no detailed figures on potassium was that Germany, of course, was the principal supply from which we imported, and nothing that is relevant to the present situation would help, so far as our importation of material from Germany is concerned.

Mr. WHITE. This bill has more than the shipping idea back of it. It is the supply of essential products for essential industries. There is a question of fertilizers and the question of nitrogen. The shortage of potash is seriously menacing the capacity for food production, so that there are two things to be taken into consideration. The transportation of some of these things has already been interrupted and others will be interrupted as the shipping becomes worse.

Mr. KELLEY. There are other features outside of the shipping, but I am dealing with the shipping proposition, because in all of the discussion that has been had there has been given as the fundamental purpose. These others, of course, are ancillary. I would like to discuss those when we come to them.

Another important item given is sea salt.

Our importations of sulphur amount to a great many thousand tons. That is enumerated in the bill. Last year we were 105 per cent independent in this country.

Senator WALSH. How is that?

Mr. KELLEY. We produced 105 per cent measured by consumption. We produced more than we used. We did not import any sulphur.

Senator WALSH. My understanding is that we imported it from Spain.

Mr. KELLEY. I am referring now to sulphur element. Tin showed practically no decrease in importation because of there being practically no supply in this country.

These elements that I have enumerated are the elements in the bill that represent tonnage, as I went through it hurriedly. There are supplies of chrome, graphite, magnesite, potassium, sea salt, tin, and tungsten. In addition to those particular elements there are a great many others enumerated that are truly rare elements, and most of those could hardly be classified.

Senator POINDEXTER. Tungsten is not so common.

Mr. KELLEY. Tungsten is not so common, but there was a substantial tonnage imported last year. That is the reason I enumerated it. So far as platinum, palladium, and other rare metals are con-

cerned, the tonnage question is irrelevant, because the tonnage is so small.

The CHAIRMAN. Mica is used in a small amount?

Mr. KELLEY. Yes, sir; it is small. It is used for insulating.

The CHAIRMAN. Don't you use about six tons?

Mr. KELLEY. I do not know the quantity.

The point I am endeavoring to establish from this analysis of the situation is that so far as this large tonnage figure is concerned, without regulatory legislation, without the building up of a large bureau fested with dictatorial powers, there has been a wonderful stimulus in the mining industry during the past four years. These figures speak eloquently of it. The same thing happened, if you please, in lead, in zinc, in copper, and in steel. Without any legislation back of it, the lead production in this country increased from 520,000,000 pounds in 1914 to 600,000,000 pounds in 1916, when there was a surplus produced, and the price declined. In 1917 there was a falling off.

Senator WALSH. That was in response to what increase in price?

Mr. KELLEY. From approximately 5 to over 11 cents a pound.

Zinc, which was selling in 1914 at about 5 cents a pound, had a production in the United States of 606,000,000 pounds. Under the stimulus of high prices, production increased up to 1917, when there was 1,335,000,000 pounds of zinc produced in this country, and no business in the whole category of industries in this country to-day is a sicker business than the zinc business. The price went to 33 cents in response to the demand and fell to 6½ cents within the last few months. By interpellation of 1904 producing conditions in connection with current prices, the price is less than 5 cents to-day upon the basis of 1914 conditions.

In this country we produced in 1914, 1,158,000,000 pounds of copper. Under the same stimulus of demand and the operation of economic law that production increased last year to 1,880,000,000 pounds of copper. When we entered the war we had a refining capacity in this country of 1,770,000,000-odd pounds. The refining capacity in America to-day is in excess of 2,700,000,000 pounds.

Now, gentlemen, I present these phases of the situation merely for the purpose of declaring that I believe it is sound business, it is good economics, it is safe governmental policy to permit, as far as possible, the industries of the United States, by natural development and enterprise of the American people, to meet the situation; and I think you will do it a great deal more effectively and a great deal more satisfactorily and a great deal more rapidly than if you attempt to violate every natural law that enters into the production, growth, and development of industry.

I do not mean to suggest at all that I am not in sincere accord with some of the provisions of this bill, and those particularly that apply to unlawful practices, deceptive practices, that have behind them any sinister motive, either of impeding the Government in carrying on its functions or unduly profiteering in business.

So far as any personal interests I may have are concerned, they would be greatly augmented, and the interests of the corporations that I represent would be augmented by the passage of the bill. I am opposing it absolutely upon the basis that I do not think it is sound business; I do not think it is sound economics.

Gentlemen, if we assume that it is necessary to pass some sort of legislation to meet this situation, is this the character of bill that you want to enact into law to stimulate the production and to encourage the development and promotion of enterprise? If this bill will have that effect, it will be the most curious working of a psychological law that I have ever heard of. If you had started out deliberately to do everything that could be done by legislative enactment, in my judgment, to stifle and to strangulate the development of industry, you could have not done it more satisfactorily or more completely than has been done by the incorporation into law of some of the provisions of this bill.

The purpose of this bill is to establish a control over the mineral industry. It is said by some of the proponents of the bill that that control is limited to the specific metals, beginning with antimony, on page 1, and ending with the enumeration contained on page 2; that it is not intended to affect the mineral industry, except so far as regulatory control of these specific minerals or metals is concerned. If that is the purpose of the bill, it is not so stated. If that is the purpose of the bill, then, frankly, the bill ought to be amended so as to carry out that idea, because it certainly is not in that shape as it now stands.

I want to call attention particularly to the following language in section 1:

* * * To assure an adequate supply, equitable distribution, and to facilitate the production and movement of necessaries, which necessaries are defined in this act to include only the following-named mineral substances and ores, minerals, intermediate metallurgical products, metals, alloys, and chemical compounds thereof.

Now, it does not say, gentlemen, that this bill is intended only to include antimony, arsenic, ball clay, bismuth, etc., but it is intended to include those substances, ores, and metals found in intimate association with these metals. It says "intermediate metallurgical products," and if I can read the language of the bill that means those metallurgical products that are produced in obtaining these particular elements, which, for instance, in the case of arsenic, would include gold, silver, copper, lead, and zinc, and the chemical compounds of these elements, which would include every nonferrous metal that is produced in the United States.

When you come to the question of alloys it is doubtful if you do not include ferrous metals and establish a control, if literally construed, over the entire mineral industry of the United States. How can it be said, gentlemen, in fairness, when you give control over sulphur, arsenic, antimony, and bismuth—those elements that are found universally in intimate association with copper, lead, zinc, and some of the other metals—and you give control over all the intermediate metallurgical products up to the production of sulphur, arsenic, antimony, bismuth, and the others enumerated, that it does not include practically every mineral that is produced in the United States. I can not give the bill any other interpretation. I have vainly followed the explanations that this language is not so intended; but, gentlemen, that language does do it, without any question, in my mind.

Senator WALSH. Would not the enumeration of these specific metals necessarily exclude such metals as iron? It might include steel?

Mr. KELLEY. It might include steel; yes, sir.

Senator WALSH. Steel would be a chemical compound.

Mr. KELLEY. Steel might be regarded as an alloy.

Senator WALSH. Yes; as an alloy.

Mr. KELLEY. Of course, we are accustomed to think of an alloy as being the smaller part of the mixture, but when you get into the realm of chemical compounds and intermediate products and mineral substances, I know of no language that can possibly be conceived of that can be broader in its application than those words.

Now, gentlemen, what has been brought to your attention so far as the mineral industry is concerned that calls for this far-reaching and dictatorial control? What situation is there? I have heard it vaguely hinted that a part of the mineral industry of the United States was in unfriendly hands, and perhaps there was some sinister motive of hampering production or interference of some kind.

Senator WALSH. Referring to what particular metal?

Mr. KELLEY. This I gathered from the testimony.

Senator WALSH. I am speaking of the impression or the rumor.

Mr. KELLEY. That is suggested in some of the testimony taken before the House committee without reference to any specific person.

You can not, because that situation may exist with reference to some particular mine operator in the United States, put under suspicion the whole mining business. That would not be fair. You can not, because that might exist in some isolated case, subject the whole mining business to such rigid control. That would not be fair.

Does not the alien-property law reach that situation? I know of one very large metal-producing company where, because suspected of German influence in the stockholding, the stock was taken over by the Alien Property Custodian and is being held by him. He is being represented upon the board of directors. I confess I have not examined it with critical care, but it seems to me that the law that gives the United States authority to take possession and cusody of property of aliens would reach the situation, if it in fact exists.

The CHAIRMAN. Was not there an entire property taken over in Pittsburgh by the Alien Property Custodian?

Mr. KELLEY. A great many plants have been.

It is proposed, as I see it, to take control. How? The outstanding features of the bill—and I do not want to go into great detail here—are the following: By the promulgation of certain rules and regulations by the President, through the Secretary of the Interior, by the making of certain acts unlawful, and by requiring a license, if, in the judgment of the administrative officers they see fit, and imposing it upon the mining, distributing, or storing of any of the metals enumerated, and by authority to requisition necessaries, as defined in the act, and by authority conferred upon the Secretary of the Interior to enter into contracts for the purchase of metals by guaranteeing a minimum and a maximum price, and by the President, in an emergency, limiting and regulating or prohibiting the use of metals.

I believe that so far as it is necessary to make certain acts unlawful in order to carry out our governmental purposes, that no one should complain of the most stringent penal provisions that would apply to any act of hostility or any act aimed at the public welfare of the United States; but I do believe, gentlemen, that some care should be used in drafting such a measure.

Under the present law it would be unlawful to permit preventable deterioration of necessaries in the production, manufacture, or distribution, or to permit waste in the production, manufacture, or distribution. Certainly there ought to be some limiting qualification to the definition of so serious a crime. Under that language, as it stands in the bill to-day, there is not a single copper smelter or lead smelter in the United States that would not be guilty of violating this law every time it operated. For instance, in the plant at Anaconda there are thousands of tons of sulphur being emitted daily as waste gases. There are tons of arsenic being emitted, and large quantities of antimony and other substances. Do you mean to tell me that it is going to stimulate production of metals to make it a felony for you to engage in a business where, irrespective of economic or market conditions, you are obliged to operate at what may be laid down in a regulation as 100 per cent efficiency? Would you, as business men, consider going into a business that was filled with as many pitfalls for the unwary as the present act?

I say, gentlemen, without the slightest equivocation, as a manner of business judgment, that I do not believe you could get men to invest a dollar and take the hazard of committing a violation of the obligations of the bill as it is drafted.

Not only is waste a crime, but hoarding is a crime. Now, hoarding is defined by section 6 as "held, contracted for, or arranged for by any producer, manufacturer, wholesaler, retailer, dealer, or other person in a quantity in excess of the reasonable requirements of his business."

Gentlemen, I have the utmost contempt for anybody who would hoard to the prejudice of the Government, but when you make it a penal offense for me to carry a stock of goods or metals that somebody may say is in excess of the reasonable requirements of business, it is very drastic legislation.

Monopolization, locally or generally, discriminatory practices, unfair and deceptive practices, etc., are all made violations of the act. I say, gentlemen, that I can not see where there would be the slightest legitimate objection to passing a proper penal statute that would adequately define the violations against the public welfare and subject the offender to heavy penalties; but I do think, under this law, if it is literally interpreted, it would be absolutely impossible to conduct and operate a business without violating the act.

I think the license feature is one that is well deserving of consideration. It may be necessary, gentlemen, to license. It may be necessary, in the interest of public policy, to license some branch of the metal business, but why you should require everyone engaged in the manufacture, storage, mining, distribution, or use of these metals or mineral substances to be licensed to do it is utterly beyond my comprehension. Where does the bill stop?

I was talking to Mr. White this morning. He said there is no intention to apply this to the miner or the prospector. But why not exclude them? The language of the bill includes them. The language of the bill not only includes everybody engaged in the mining business but it may extend to anybody that is engaged in using its products.

I do not see what the idea is in building up such a huge affair. I think Mr. Hoover testified before the House committee that there

was an administrative force of 750 clerks issuing licenses in the administration of the food bill. Now, it may be necessary in the administration of the food business. I do not know anything about that business, but I can not conceive of it being necessary in the administration of the mineral business. I do not see any room for it.

The provision regarding the President's authority to requisition and pay just compensation for necessaries, I think, of course, is one that ought to receive the support of everybody. Everything in the Nation, every part of the Nation's wealth ought to be subject to the command of the President upon payment of just compensation; but I can not conceive of the justness or equity of the provision contained therein that if you do not agree with the Government's agent as to the value of the property, you shall be paid 75 per cent of the value and be permitted to sue for the balance. As a trading proposition it is, no doubt, marvelously advantageous——

Senator WALSH. That provision is found in nearly all the legislation authorizing commandeering.

Mr. KELLEY. I know it is. I have not given the matter attention from a legal standpoint, but it does seem to me that taking my property upon the basis of a 75 per cent payment of what you conceive to be a fair valuation of it is hardly in harmony with the spirit of the Constitution that I shall have just compensation for it. I would have some doubt about its constitutionality.

Senator WALSH. Does that provision require payment in advance?

Mr. KELLEY. I do not know; but I am deprived of the possession of the use of the property.

Senator POINDEXTER. It does not require it.

Mr. KELLEY. I have not inquired into it.

Senator POINDEXTER. I have. The Supreme Court of the United States has passed upon the question in several cases.

Mr. KELLEY. I think the authority to requisition should be ample, but so far as 75 per cent is concerned, it strikes me as being unfair.

Senator WALSH. How far could you reach it?

Mr. KELLEY. Pay what the Government agrees it is worth. If the party is dissatisfied, let him sue for the balance. If I go and take your property and have legal authority, I say to you, "Senator Walsh, it is worth $100,000." You say that it is worth $125,000.

Senator WALSH. You can see that one might easily offer more than he thinks it is worth in order that he might escape the delay and burden and cost and annoyance and cost of litigation. You have done enough of that kind of work to recognize that in endeavoring to get a right of way, for instance, you have sometimes offered more than you believed would be awarded by a commission.

Mr. KELLEY. Oh, yes, sir. I would, and I often have; but if I had the authority to go and take the property upon paying 75 per cent of what I thought it was worth, I think that the party to whom I made that offer might be put in the position where he would be willing o take 75 per cent rather than go to the expense, annoyance, and harassment of suing.

Senator WALSH. I agree with you there, that it would be eminently unjust and unwise to give the ordinary corporation vested with the power of eminent domain any such power, but bear in mind that this is a public official, an officer of the Government, who would have no private purpose to subserve.

Mr. KELLEY. I do have that in mind, but I think that it is a matter of human nature, and I have found—and I say this without the slightest criticism of them—officers of the Government who trade as keenly and as zealously for the interests of the Government as they could possibly do for the interests of a corporation. They should be fair, but fairness does not mean liberality necessarily with money that does not belong to you. I think most of the Government officials have a proper sense of responsibility to the Government.

The next distinctive feature is the authority of the Secretary of the Interior to make contracts limited to two years. I think some one should be authorized to contract for the Government. They do contract for the Government right along. The entire copper output of the country is now being taken care of under contract with the United States Government through the agencies already established. If there is any real purpose to be subserved in creating an additional one authorized to do this, I have not the slightest objection.

Senator WALSH. Is there a period feature to these contracts?

Mr. KELLEY. I do not know what the limitation of law is, but we make contracts more or less for months in advance with both the War and Navy Departments.

Senator WALSH. How many months?

Mr. KELLEY. We have made contracts for the delivery of copper that require approximately a year to fill. I have in mind that last week we closed a contract with the Ordnance Department for delivery of a very large tonnage of grade A zinc, running from deliveries for six months.

Senator WALSH. Do you see any desirability in it—in the effort to stimulate production?

Mr. KELLEY. I do not. I will tell you how I feel about it. I feel that if you are buying things merely to give a producer a price, and not because the Government has a present or prospective need for the metal, it is the same thing, in my judgment, as guaranteeing a price. I do not think you can do it and get away with it. You are breaking a fundamental economic law when you do it. You may do it and get away with it for a while, but you can not eat these metals. They come back to the market ultimately, and the price is going to be regulated absolutely by the law of supply and demand. I look at it this way. Much has been said about guaranteeing a minimum price for a period not to exceed two years. In the case of a small deposit, partially opened up, where they have adequate working facilities, a two-year contract might be helpful. So far as looking at it in a big way is concerned, a two-year contract would not be of any consequence, because you can not develop or equip a property in two years. It can not be done. The ordinary property, where you have got to go down in the ground a considerable distance, can not be handled in two years. If the Secretary of the Interior contracts for two years in advance and makes advances to stimulate production, he must take a certain amount of metal from the hands of the producers. He has got that metal and he can not dispose of it faster than the necessities for the metal arise to take it off his hands. If there is a deficit in production, you do not need that contract.

If there is a surplus in production what are you going to do with the metal as it is delivered? He will hold it until the termination

of this law, six months after the war, or until the termination of the contract period. If there is any considerable stock of it in the hands of the Secretary of the Interior or Government officials it is going to be placed back on the market and it is going to be liquidated and turned back into money and the market has to absorb it. You can not push water uphill. You can not defy the law of gravity. You can not any more sustain a business that is not capable of being sustained by the artifice of a guaranteed price than you can do anything along those lines. You can not do any of those things for a continued length of time.

There have been discussions of the guaranteed minimum and maximum prices. The same observations I have made with reference to the contracts for the future apply to the guaranteed minimum and maximum price. The minimum price is going to be the price some day at which the minerals should sell, regulated by supply and demand. The maximum price is purely a theoretical proposition for the reason that it can not be a scientific price. When you fix a maximum price, unless you fix every factor of cost that goes into the production and the other elements of expense in order to maintain a fixed margin of profit, you disturb the mathematical equation. You have supply and you have demand and they are related, one to the other, and they fix the third factor, the price, and this third factor is variable The moment you take one factor and make it constant, leaving the other two factors variable, you have got a situation that can only maintain as long as the maximum price is so far in advance of the cost of production that it does not crowd to the point of diminishing a reasonable profit. That means that in 9 cases out of 10 the maximum price is already high and is never reached. We have had maximum prices for lead and zinc established by the War Industries Board. They are paper prices, and they do not apply to the business.

Senator WALSH. That is not the case with copper?

Mr. KELLEY. With copper it is not a maximum price; it is a fixed price at 23½ cents. That fixed price can be maintained at 23½ cents as long as there is a deficit in production, but the moment that the supply exceeds the demand, unless there is a firm obligation on the part of the Government to take 100 per cent production——

Senator WALSH (interposing). A guaranty?

Mr. KELLY. Yes; a guaranty of 23½ cents, or they would not do it. That means we would have to market elsewhere at a less price.

Senator POINDEXTER. The Government uses nearly all these minerals, does it not?

Mr. KELLEY. No; that was the astonishing thing in going through this list. I was greatly surprised at that, that the Government uses but very little of those minerals or metals directly. Indirectly, in the general aid, such as Mr. White referred to, as the increasing of food supplies, the Government is interested in their distribution. I looked for the necessity for Governmental aid. All sorts of reasons are given. For instance, the importation of most of the sea salt covered by this bill last year was from the West Indies. I wondered why it was necessary to stimulate the producaion of sea salt. The reason given in the document is to inquire into whether or not domestic sea salt can be substituted for the imported sea salt

without ruining the food products put up with it. That may be a perfectly good reason. I do not know. In fuller's earth and some of the earthenware and the china clay that is imported there is not the remotest connection between the Government's necessity and a great many of these things, according to this document, except upon the general theory of developing the resources of the United States and building up a domestic production, whereas we have had heretofore an importation of some of these things. Of course, there are some that there is a very desperate and crying need for. There is no doubt about that, but I do not know of any one of these metals that is in that category and that, if it exists as a practical proposition, can not be developed.

You gentlemen know these things about the mining business. We sit around a table down here and talk about a lot of things. You have got to get into the mountains, usually, to find a mine. When you get rock that contains gold, silver, copper, manganese, or anything else, you do not know that it is ore until you find what it is going to cost to get the stuff out of the rock.

Senator POINDEXTER. It may be a float, and you have to find out where it floated from?

Mr. KELLEY. Yes, sir. Sometimes you have to build railroads and wagon roads. You have to build concentrators, reduction works, and plants of that sort. You have got to buy machinery. If you had the biggest copper mine in the world, or in the United States to-day, and should start to develop it, you could not equip it under present conditions. It is not a matter of months; it is a matter of years to get the equipment. You can not, by fiat of legislative enactments, ipso facto, create a flourishing mining industry. That is an iridescent dream. These deposits of manganese and potash are not going to spring open fully equipped upon the signature of these papers that will make this bill a law. You can not develop industry that way.

We have been following this mater up. There is not a single machine shop in the New England States that has a piece of machinery under contract for us where we have not got a man to hold them on the job. They will be working under a Class A or Class B certificate of priority for us. The next day some one comes who is a little bit ahead of us. They drop our job and go to the other one. Then we get on the job and get a certificate that puts them back on the job. When the machinery gets on the car we put a man on the car to see that it is not sidetracked.

Take this manganese business in the West. There is a freight charge that you can not reduce and keep the railroads going of from $12.50 to $15 a ton. The low grade ores would not stand that freight charge at anything like the present prices. It is too big. As the gentleman from the Survey said, it is too big a chunk out of it, in the first place. All right, then, you evolve some method of concentrating ore. We went into the business of developing ferromanganese in Montana at the solicitation of the Government.

Do not look upon me as an obstructionist to anything that is going to help, because I think our organization has demonstrated its willingness to cooperate in every way that it is possible for any of us to do. We started the ferromanganese business. We had no transformers. We got priority orders. They began to come along pretty

well. We bumped up against the electrode situation. The demand for electric furnaces has run away from the manufacture of electrodes. We searched this country for a producer who would take an order. The price did not cut any figure. We could not find any. We tried to finance an outfit and to increase the equipment so as to get 200 tons a month. We found that we could not get the results that we wanted by a ramming process. We had to get a press. We said, "All right, we are going to do that." Well, the best promise we could get was delivery within a year. Those are the things, gentlemen, that are practical in this situation, and they are things that you can not overcome by mere legislative enactment.

I trust I have not given the wrong impression about the matter. I feel that this bill is absolutely unnecessary. I feel that it will not accomplish the purposes which are so confidently stated will be the result of its passage. I feel, on the other hand, that in its present form it is entirely too broad and too drastic. It brings too much of the mineral industry under regulation that does not need regulation.

Gentlemen, if you have an automobile and it is working in pretty good shape, you do not go out and tinker with it; you let it alone. I want to tell you, from a practical operating standpoint, some of the difficulties that we have gone through cheerfully and patriotically in the last year and a half or two years have been trying, when we were attempting to meet all of the conditions that came about from a state of mental excitement that is perfectly natural as a result of the conditions that are prevailing.

If there is a wise economic policy with reference to these matters that is fundamentally sound, it will do a wonderful lot for the United States, but if that policy is built up upon an arbitrary legislative enactment that tries to defy natural laws, it will not work. Notwithstanding what I have said, I say pass a law that gives the President of the United States, that gives the Bureau of Mines, or whatever administrative body you wish, every right and every authority that it ought to have to see that there is a maximum production and utilization. The industries of the country, gentlemen, are not antagonistic to this proposition. The fact that by any stretch of this law the Anaconda Copper Mining Co. could be brought under the regulatory control of the Bureau of Mines would not give me one moment's apprehension. I am not arguing from that standpoint, and I am not arguing from a selfish standpoint, because whatever you do, if anybody can live, we will take our chances. That is the way I feel about it, but I do not believe that this should become a law.

Senator WALSH. Referring to the shipping feature of the problem that is before us that includes, first, the pyrites?

Mr. KELLEY. Yes, sir.

Senator WALSH. They come from Spain. The manganese comes from Brazil and Cuba. Those are the two sources of the greatest tonnage. You suggest that the efforts of the Government should be toward stimulation, by wise enactment, of those metals at home. What have you to suggest in that way? If the ships become absolutely necessary for transportation purposes and other purposes connected with war and the importation of these metals ceases, what shall we do?

Mr. KELLEY. Senator Walsh, it is not a problem of not having the potential capacity to meet the situation. Here is what I mean by that: The importation of pyrites in the United States has been very largely, practically altogether, for the manufacture of sulphuric acid. Potassium has been brought in for fertilizer purposes. Outside of the munitions and steel requirements, a large percentage of sulphuric acid had gone into the manufacture of fertilizer. Sulphuric acid is a great solvent in all lines of business kindred to the fertilizer business and different metallurgical operations.

Now, at Anaconda we can manufacture and produce, in addition to what we are now producing, approximately 2,000 tons of 50-degree acid a day. I believe the production of sulphuric acid last year got up to 9,000,000 tons. At Anaconda, say that we could get 2,500 tons a day. That would be 7,500,000.

Senator WALSH. The Anaconda smelter could supply the entire needs of the country, so far as sulphuric acid is concerned?

Mr. KELLEY. Yes, sir. On top of that there is the Utah smelter. We took that up with the Bureau of Mines.

Senator WALSH. The Garfield smelter?

Mr. KELLEY. The Garfield smelter could supply another large tonnage.

Senator WALSH. And the Takoma smelter?

Mr. KELLEY. Every copper smelter could supply some.

Senator WALSH. Every pyritic smelter in the West?

Mr. KELLEY. Yes, sir. The capacity for making sulphuric acid is absolutely unlimited, practically, in this country. There is practically an unlimited amount of gas that is now being wasted and going out in the air.

Senator WALSH. Mr. Kelley, kindly tell us what stands in the way of the utilization of that obvious and well-known domestic source of supply.

Mr. KELLEY. In the first place, the construction cost is not a particularly serious item, although large. There is no difficulty about operation; there is no difficulty about manufacturing and laying the acid down at the plant. The utilization of the acid, however, requires transportation for long distances. We had the matter up in connection with the Bureau of Mines and the War Industries Board and the Ordnance Department. We told them we would take charge of the building of the plant and that it would handle the matter and turn the gases over, and that we would operate at cost, turning the acid over to the Government, if it needed it, during the war. For some reason or other the proposition was turned down, I am advised, and I think it was because of the transportation factor.

Mr. WHITE. The Eastern acid plants were closed down because of a lack of tank cars.

Senator WALSH. The Eastern plants?

Mr. WHITE. Yes, sir; because of a lack of tank cars.

Mr. KELLEY. Yes; because of the tank-car proposition, I believe.

It was purely a tank-car proposition, as I understood it. I suggest this alternative to the situation. You need the munition factories in the East. The proposition of building munition factories in the West on account of the labor supply and one thing and another

was not attractive. If we could bring about a condition by regulation of the industry, or otherwise, whereby the sulphuric acid that is now used in the fertilizer business in the East could be released for munition purposes in the East—and you know we have within 40 miles of this place a great phosphate deposit, and within 200 miles the greatest phosphate deposit in the United States and we could establish that fertilizer business out there; the whole situation would be solved. The fertilizer would require the legislation that Senator Walsh referred to for opening up the phosphate lands in the West. I must confess that the tank-car situation, while it was a very grave one, did not appeal to me as an insuperable obstacle. However, I do not want to go into it that far, because of certain confidential communications. The demand for sulphuric is and is going to be a very serious one. A thousand tons could be handled in 20 tank cars a day. I believe the tank cars can be gotten. If not, they can be built. They can be run from the West through in trainloads. I think that could be done.

Senator WALSH. If a source of supply were discovered in the East here it would apparently be confronted with the same obstacles, though not so acute, perhaps.

Mr. KELLEY. No doubt. Really it would be more acute.

I was interested in the testimony of the gentleman who testified this morning with reference to his graphite situation. He told us about a contract that had been entered into by a concern in Hartford and how fairly they had treated him. He was finally shut down and began sending it to Pittsburgh. Why? He could not get the cars through the neck of the bottle at New York, but he could get cars at Pittsburgh. If you build sulphuric acid plants in this district down here where the traffic congestion is so intense and so severe, the embargoes and interruptions to traffic down here will be far greater than the delays in moving transportation through the open routes. We experienced that in our copper business. At one time last winter we had over 40,000,000 pounds of copper 30 days overdue. We were finding every pound of copper we could in Montana and shipping it to the Gulf, because we could get an outlet that way and because we could get it to the customers so much quicker than through New Jersey. There was no freight congestion in the West.

Senator WALSH. So far as sulphuric acid is concerned, if we seek, then, to conserve the tonnage now used in the importation of pyrites from Spain, we simply add to the burden upon our railroads, having the supply here available. So far as sulphuric acid is concerned—and sulphur is one of the elements here—it is a transportation problem simply?

Mr. KELLEY. Certainly. Now, let me refer to arsenic.

Senator WALSH. I was going to ask you to take manganese, but arsenic will do just as well.

Mr. KELLEY. Arsenic is designated as a necessity. It is sought to regulate and control a small supply of arsenic. I think the importation was given at 20,000 tons. That figure is from recollection.

Mr. WHITE. It is not as much as that.

Mr. KELLEY. We are emitting from the stack at Anaconda 50 tons of arsenic a day. That would be about fifteen thousand to sixteen

thousand tons a year. That would take care of the entire situation.

Senator POINDEXTER. Can you reduce those gases so as to make arsenic and sulphuric acid at a cost that is practicable?

Mr. KELLEY. Oh, we have. We have probably the cheapest acid cost in the world to-day. You see, we have to take a certain amount of sulphur out of the fumes, and it would be a direct benefit, because we thereby render the fumes less noxious.

Senator WALSH. And thereby hangs a tale (laughter).

Mr. KELLEY. Yes; that the Senator is somewhat familiar with.

I want to develop the arsenic situation because it was commented upon by Mr. Hoover, for whom I have a profound regard and the very sincerest respect. Prior to the war we were producing a comparatively large quantity of arsenic. We had been producing it for 16 years or thereabouts. After several years of the closest cooperation with the Bureau of Mines we entered upon a plan of spending approximately a million dollars and a quarter in the construction of a new stack and new flues, and putting in Cottrell treaters. That work is proceeding just as fast as it can be done. Now, we will have a supply of arsenic sufficient, according to the figures, to take care of the United States, and if we do not sell it, we will have to dig holes in the ground and bury it and cover it up, and we intend to do it.

A complaint was made because arsenic increased in price from 15 to 20 cents a pound. It was cited as a profound case of profiteering before a House committee. The fact of the matter is that for 16 years we never made a dollar on arsenic, and we never sold a pound that we did not sell it at a loss, until a temporary increase in price came in the last year or two. I do not know how much was sold at 20 cents. We did not get any but a very small amount. The price cuts no figure, because this arsenic has to be taken out of the fumes.

Senator WALSH. Then, so far as the shipping end is concerned, it does not involve arsenic?

Mr. KELLEY. There is necessity for importation now. This development that we are making will not be ready for another year, and I doubt if any more could be gotten more quickly than that.

The CHAIRMAN. You are working on that proposition now?

Mr. KELLEY. It is well along now.

Senator POINDEXTER. When will that come into production?

Mr. KELLEY. We are now manufacturing arsenic in considerable quantities, but this big installation will be ready next year.

Senator POINDEXTER. How much is the production now?

Mr. KELLEY. I think that we are producing something over a ton a day. Then we have a large stock of crude.

Senator WALSH. So far as manganese is concerned, you think that will eventually take care of itself?

Mr. KELLEY. I have some data about that. The increase in manganese has been enormous, and it is going to increase to the limit of potential output.

Mr. Hewett, who has such a splendid knowledge of this subject, says that he does not think that the United States will ever become wholly independent of imports, because of the very large demand. I do not know. I do know that his figures are conservative, because I think Montana will, in 1918, ship over 200,000 tons of manganese ore

of a grade from 35 to 40 per cent. I know that the Anaconda Copper Mining Co. is shipping now about 250 tons daily, and we expect by August to raise that production up to between 400 and 500 tons, and that is a very large proportion of the entire amount of production up to last year.

Senator WALSH. If it were found necessary to take off the tonnage now engaged in the transportation of manganese from Brazil and Cuba, what suggestion have you to make to meet the situation?

Mr. KELLEY. I have not any. As I understand it, it is an absolute necessity. President Farrell, of the Steel Corporation, says that they have not sufficient stocks to run them beyond September or October.

Senator WALSH. Your idea is that there is nothing in this bill that would help to relieve the situation?

Mr. KELLEY. I can not conceive of anything in this bill that will help the situation greatly. You might get a few scattered deposits somewhere, but if there is any manganese ore that is lying around loose, the Congress does not need to appropriate ten million to develop it, because the money can be gotten while we are sitting around the table talking about it. If somebody knows where the deposits are, I can assure them of that proposition.

The CHAIRMAN. What ores or metals are there in the bill, if any, that you think should be covered by legislation of this kind or the kind that you refer to?

Mr. KELLEY. I think that in the case of some of the very rare metals, where you might require a lot of research work and a lot of technical men, the Bureau of Mines could be exceedingly helpful in developing those deposits.

The CHAIRMAN. Mention one of them.

Mr. KELLEY. Platinum.

The CHAIRMAN. Is there any platinum in the United States that could be immediately developed?

Mr. KELLEY. Yes, sir. I do not know how much. There are the black sands on the Pacific coast that have an appreciable amount of platinum. There is a supply in Columbia. There is platinum in small amounts found in connection with gold and silver ores. The whole supply is not a great one.

The CHAIRMAN. This bill is called a war measure.

Mr. KELLEY. Yes, sir. If you want to develop the supply of platinum in the next two years, I do not know, and I do not think anybody knows, how you will do it. I do not think this bill will help you.

The CHAIRMAN. This bill will expire six months after this war.

Mr. KELLEY. And I hope that will be soon.

The CHAIRMAN. We all do, Mr. Kelley.

Mr. KELLEY. Yes.

The CHAIRMAN. Would not the section allowing the chief of the bureau to handle the matter and put out his agents to pick up platinum help that?

Mr. KELLEY. Platinum at $105 an ounce is going to be developed, if anybody can find it. With Russia possibly cut off, or undoubtedly cut off under existing conditions, the platinum industry, wherever there is a possibility of it, I think will be followed up with a great deal of zeal.

Senator POINDEXTER. Under present conditions?

Mr. KELLEY. Yes, sir; without legislation. I do not think you need it. I think that is true of most of the metals that are increasing in cost as the result of war conditions.

Senator WALSH. What has been the appreciation in the price of platinum?

Mr. KELLEY. From $40, I think, to $105. It has been very large.

I want to suggest one thing in connection with the development of war industries that I think is practical. Where a business is solely dependent for its existence upon a continuation of a state of war; that is, where it depends upon abnormal conditions existing in this country as a result of war, I think you gentlemen should make a provision, by proper legislation, for the amortization of capital that is contributed before the application of the excess-profits tax act or the income tax act.

In connection with this manganese situation, I had occasion to take the question up with Mr. Roper and his advisors, of permitting us to get back the money that we actually invested before the application of the tax on profits. Mr. Roper told me he had that question up in connection with a large number of enterprises, and that there was no provision in the income tax bill or the excess-profits bill that allows more than the ordinary depreciation account. You see, if you are working on a gamble of getting back your principal, and the principal is regarded as a profit, and 60 per cent is taken for taxes, it is hardly what might be called an accelerator.

Senator WALSH. You spoke about putting up a concentrator for the concentrating of the manganese ore.

Mr. KELLEY. I spoke of putting up an electric furnace plant at Great Falls.

Senator WALSH. After the war you will be competing with this ore from Brazil that was sold at something like $25 or $30 a ton.

Mr. KELLEY. I do not think we will, Senator, because I do not think we will stay in the business.

Senator WALSH. That is, you figure that you will not be able to maintain yourselves at all after the war?

Mr. KELLEY. Yes, sir.

Senator WALSH. So that is purely a war venture on your part?

Mr. KELLEY. Yes, sir.

Mr. WHITE. Mr. Kelley, in regard to the ferro manganese plant, I understood you to say that in most of these cases it might take some time to develop a plant, a new plant, and to produce material.

Mr. KELLY. Yes, sir.

Mr. WHITE. As I understand it, in this ferro-manganese plant, which I understood you to say would make possibly 10 per cent of the total requirements for ferro manganese, your company would not consider that as a good after-the-war investment. In other words, you would have to be patriotic enough to build that plant, considering the time element and the fact that the war might close within six months and before the plant was in operation, in which case it would be a dead loss. In your case your company might be willing to take the risk of a dead loss of its investment by putting up a plant and continuing from six months to a year's time, granting that the war closes in the meantime, and you would have no market. But, if we were to rely for our supply of manganese on

companies who were patriotic enough to take such a chance of loss, might we not be unable to secure an adequate supply? As you know, the great supply comes from Brazil and Cuba, and embargoes are even now going into effect. We produced last year only about 110,000 tons, while our total requirements were about 800,000 tons, 630,000 tons of which came by boat from foreign sources. The problem which we are now facing is that of supplying the 630,000 tons of foreign ore. The development which has taken place in Montana may take care of one-tenth of that supply. The ore can now be shipped to eastern points for treatment. When your electric furnaces are in condition it may be treated there, thereby saving the transportation factor.

As I get your situation, your company has gone ahead and is taking a very large risk in putting in such installation. Of course, so far as I know, that electric furnace installation may be usable for other purposes in the future.

Mr. KELLEY. There is no risk in the world, in my judgment.

Mr. WHITE. Does that mean that the electric furnace capacity will be used for something which will be a peace-time industry? I understood you to say that the ferromanganese production was not an after-the-war industry.

Mr. KELLEY. It is not. But if the war were to be suspended tomorrow—this is just a guess; that is all it is worth, of course—it would be manifestly impossible to readjust the business situation within a period of two or three or four or maybe five years. We do not know. The shipping industry is not going to be a reestablished business at the close of the war. We are going to have an army of some million men in France, I hope. We have got to take that army back. We have got to bring the supplies and equipment back. That will be the first duty of the American shipping. We know that the most valuable deposits of manganese in the world have gone into the possession of the Germans. We know that manganese is one of the things that Germany was most in need of prior to the war, and we feel that though Germany may not control the Ukraine, that notwithstanding that, on account of her favorable location, she can get that supply of manganese as against the United States, as a question of direct import, and that we are going to have a period for some time after the war is over when we will have the ferromanganese business at Great Falls.

Mr. WHITE. But the increased importation of Brazilian ore has more than made up for the loss of production. India and Brazill would now meet all normal markets which existed before.

Mr. KELLEY. Yes; but the ore is not as valuable.

Mr. HEWETT. It is 45 as against 48 per cent manganese.

Mr. KELLEY. But what is there in this bill that is going to help the situation?

Mr. WHITE. The question is primarily, What are we going to do? We had 150,000 tons of shipping to bring ore in from Brazil last year. If we take it off, how are you going to meet the situation?

Mr. KELLEY. I do not know.

Mr. WHITE. You are assuming that you can not stimulate the production of manganese ore. It is not taking place fast enough. Normal conditions are not meeting it. We must produce this year 350,000 tons.

Mr. KELLEY. Concretely, what is your idea? What could you accomplish under this bill that the industry can not accomplish without it?

Mr. WHITE. It would seem to me that the industry has not responed as rapidly as it might. While its production has increased rapidly, relatively it has not increased anywhere near rapidly enough. Of course, I do not know all the reasons why that production has not responded, but it does not seem to me that it should take two years to develop a new manganese property. In fact, as has been testified during these hearings, the production to-day is coming from properties unknown in 1914. We have properties which we know of now. You can take either a pessimistic or an optimistic view, but an optimistic view, it seems to me, shows a possibility of going a long way toward meeting the supply.

I believe Mr. Hewett's statement that we could not meet the supply in this country was based on high-grade ore and not the low-grade ore, which the steel companies have said they could use if they had to, to a very much larger extent than they are now using it. From those two sources—the lower-grade ores and the increase in high-grade manganese—we can practically meet the situation, possibly bringing in Cuban ores, which are close at hand.

The only element is the time element for private enterprise. The question is, simply, will private enterprise, without guaranties as to investments in the mines, and without any guaranty of some agent who will take action in priority matters to secure proper recognition of the importance of material, meet the situation quick enough? I warrant that production will expand, but it is the time element that has to be carefully considered.

Mr. KELLEY. Do you think that the Bureau of Mines, with all due respect to it, or the Geological Survey, could have developed these mines at Philipsburg or Butte, or gotten the production of manganese up to where it is as rapidly as it has been done by private enterprise?

Mr. WHITE. The assumption is not that the Government agency is going to operate the bulk of the mines. It is going to take private initiative and speed it up and remove those factors which are preventing private initiative from working at its maximum.

The graphite situation was brought to our attention. Mr. Conklin said that the transportation situation is all right. The reason why it is all right is that when it was brought to the attention of the agencies here, the Shipping Board and the Bureau of Mines, the matter was properly presented as to the importance of one material as compared to another, to the Railroad Administration. The Railroad Administration at that time did not know graphite from any other material.

The CHAIRMAN. I may state for the benefit of Mr. Kelley that we have had no one from the Bureau of Mines or the Geological Survey to explain the reasons for this bill. I would like to ask Mr. White now how he is going to speed up production.

Senator WALSH. I undestood he meant by giving priority. For instance, a man has a manganese property out West. It is necessary to put machinery on it in order to work. I understand Mr. White to say what they propose to do is to get a priority order, both in the

matter of production and transportation. But, then, Mr. White, you do not need legislation for that.

Mr. WHITE. It is a matter of presenting the factors or questions that may be raised to someone who can render judgment as to the importance of these things and advise existing agencies. I am not discussing particularly the question of where this Administration may go. The War Industries Board people, in their testimony, have indicated that they do not have sufficient power, in their judgment, to meet the situation. Questions relating to priority in dealings of this kind are usually referred to the car-service section, which handles these matters. It is a question of which may be the most important product, and of finding someone to exercise judgment as to whether this mineral or that mineral or this group of products or that group of products should be given preference. Now, the problem as it comes up seems, above all else, to call for an organization which can balance the various factors and insure——

Senator WALSH (interposing). Suppose, now, this bill is enacted as it stands.

Mr. WHITE. Yes, sir.

Senator WALSH. How would the situation be changed? What then could be done to expedite either the production of the necessary machinery or the transportation of it, or the other equipment necessary to operate manganese mines?

Mr. WHITE. The first assumption in this whole transportation situation, to my mind, is this: In world shipping we have reached a stage where nonessential traffic has been eliminated to a greater extent than railroad traffic. We are apparently coming in this country to one of two things. Our railroads are handling the situation better now and with greater dispatch, but we may come, as the labor situation becomes more acute and the rail situation becomes more acute, to a further curtailment of nonessential movement. I believe there is more room for the elimination of nonessential traffic so far as railroads are concerned than there is with reference to shipping under present circumstances.

Take the railroad transportation side of the question. I have not gotten to the question you asked, but taking the general question of what districts might be stimulated let me say this: The question was brought up for discussion with regard to the possible movement of western acid to eastern points, and naturally the transportation problem was brought up. The suggestion was that a million tons of sulphuric acid might be produced in the western district. I believe that these people who have been connected with this problem have been favorably inclined toward the possibility of the establishment of munition plants at the points of production of western acids, so that you would not have to transport many of the materials. The transportation of 1,000,000 tons of sulphuric acid makes it a serious problem.

The proportion in a ton of acid is about 400 pounds of sulphur, and the rest of the material is made up by the chemical reaction of that sulphur with water in it. It is a serious problem to move for 1,500 or 2,500 miles this sulphuric acid, which is of very heavy bulk, and it is a difficult thing to move, as compared with the situation in the South. We are assuming that in the West you may develop

that acid in connection with the munitions plants. That is one phase of the situation. The other is that we have pyrite plants in the South. There are related to them acid plants to turn the sulphur into acid. The acid-plant capacity is now there. The shortage in pyrites, however, threatens to close down those plants. Within a radius of possibly 100 miles of these plants are pyrite deposits which might meet the needs. That is the local part of the situation, and that is the situation that has to be met. There is a demand for 400,000 tons of pyrites within a radius of 150 miles of those plants, so that the pyrite deposits and the plant capacity and the fertilizer plants which use it are all located in the same locality. The railroad haul is negligible, and the question comes up as to what can be done under this bill to secure a supply of pyrites in that locality. What is being done? There was no production of pyrites in that part of the country, except a few thousand tons. We have produced some in Virginia and other localities farther North. We were told by people who had made examinations before the war that there were no pyrite resources. A great many people in the South prospected for the material. Now, we have a possibility, an immediate possibility, if the proper stimulation can be supplied, of very largely supplying that location with pyrites from mines within its own radius.

Senator POINDEXTER. Has the Government examined that?

Mr. WHITE. We have examined it. There is a peculiar situation that has developed with reference to pyrites. Sulphur and pyrites can be used in these plants interchangeably. No; I will have to qualify that. Sulphur can be used in any of the plants' equipment. You have got plants equipped to burn pyrites, and many of those plants have been using sulphur. They used sulphur because the Government practically enforced a price of $22 a ton for sulphur for the ammunition plants, and for certain of the fertilizer plants, when it was selling on the open market for $30 and $40 a ton. With the increased cost of labor to-day it is cheaper for the acid plant to use sulphur, if it can get it, than to use pyrites. The chief contention has been down there that the people received a certain amount of sulphur to use under the assumption that we might have enough sulphur supply. There has been a tremendous extension in demand. Our military authorities are coming to the point of reserving the sulphur supply for munitions plants. The fertilizer plants have either got to import or go without. They have not recognized that situation until the last few weeks, and there has been a question of commandeering the whole sulphur supply and preventing its use for anything except military munitions purposes. In that situation the consumer of the material, who is not a miner and who does not know how long it takes to develop a mine, has not stimulated the production of pyrites, because he was using sulphur, which he preferred. The situation to-day is that we have pyrite mines capable of increasing the production three or four times that could take care largely of the situation, but they are not doing that.

Senator WALSH. Why does not private enterprise respond to the increased price and develop those mines just the same as with us? Everybody who has a manganese prospect is busily at work at it endeavoring to put his product on the market. You do not think of

any place in the West, do you, where you have to coddle an industry of that kind in order to get the people to take care of it?

Mr. WHITE. Let me keep to the pyrite illustration. It probably does not apply farther west than Colorado. To open up some of those new pyrite mines has taken, let us say, $200,000. Where there are three of the most important mines, which might produce a largely increased amount, there are a dozen smaller ones that are at a standstill as far as increased production is concerned. They can not finance themselves locally. You asked the question, Why can't these mines extend those operations and finance themselves? Again there is the question of time. You have the time element to consider and the fact that the war may close in six months' time. The former supply of pyrites has come from Spain at a price of possibly $6 a ton, delivered in southern ports—$6 or $7 a ton at the plants. Now, if a man should put into one of those properties an additional three or four hundred thousand dollars, and the war should close about the time he began to produce, the chances are very good that he could not sell his product in competition with the foreign material, and he would still have to pay for his whole plant. If the war should close within three or four months, he would have the plant on his hands and would be just beginning to produce.

Considering the shipping situation and the rate at which we are building ships, I do not think he could expect more than a year of high prices; at least, they would not be as high as they are at the present time. That material would come back into the southern market. I say, therefore, that no man advisedly would put in any more money than has been put into the southern deposits unless he has some assurance of a reasonable period during which he could market the material for a sufficient amount to at least partially pay out his investment. I believe if some of those men could be assured of a reasonably permanent business and were assured of a market for a year and a half, it would encourage and stimulate production.

Now, there is the question of the fertilizer plants shutting down. They will probably have to shut down. They are not going ahead. They have had a stimulus of high prices for a year and a half, but there has always been this uncertainty. They have been confronted with the labor situation and have had other troubles as well, which, of course, this administration could not remedy. The fact remains that if the necessity for pyrites was brought home to the existing agencies pyrites would receive consideration in its relation to other materials.

I understand that 22,000 laborers have been withdrawn from the Government plants in Alabama and Georgia and our mines are running one shift instead of two, so that these men who have put money into the business have been handicapped by transportation and labor problems and are now handicapped with the question of the extent to which they have a market. There is just a possibility that they will not have any market in six months. Under those circumstances these men, with no assurances in this regard, are at a standstill.

The CHAIRMAN. These men in Nevada went right ahead in the business of producing manganese without a guaranteed price, and are producing a great deal right now.

Mr. WHITE. The mining of manganese from surface pockets, as it occurs in many localities would quickly pay itself out.

Senator WALSH. I had the idea that pyrites, when you get below the oxidized region, are generally shallow mining.

Mr. WHITE. The mines are not very deep. There is the question, of course, with reference to all these deposits. and it applies to the manganese situation, of the milling or preparation which is necessary. In some cases it is a simple problem; in other cases it requires complicated milling. You may simply need log washers in one case, while in another case you need more complicated apparatus. Some of those southern pyrite deposits require milling of the deposits and rather expensive equipment with the opening of the mines. There may be considerable mine development. Oftentimes railroad facilities are quite distant, and a railroad has been built for 12 miles. With reference to that mine, it probably could expand production two or three times, but it has reached the limit of its capital, and with no assurance of stability in prices, it can not borrow the money. If a man has a contract in his pocket which would give some assurance as to what price it could be sold at in two years, he might go ahead. The southern banks, which are more or less short of capital, have had considerable experience in new development since the war, graphite being a good illustration. Many people have gone into the business, but because of the peculiar handicaps in connection with the situation many of the mills have been in financial difficulties, and the banks have been disastrously affected as far as some of the loans are concerned. The situation is such now that it is impossible to further finance these mines.

The assumption of the bill is, first, do we need the material; is it going to cut off some very essential industry? Now, the assumption is that this administration is not going out and fix a price or guarantee a price on all minerals mentioned in that bill within a few weeks after the bill is passed. He can only establish it under presidential supervision.

Mr. KELLEY. Why not at once?

Mr. WHITE. Undoubtedly, where it is clear, it will be done as soon as it could be done with reasonable judgment. The assumption is that the information and the knowledge regarding deposits will be at hand for reasonably prompt action if any such bill could be passed.

Senator POINDEXTER. You have described pretty fully in detail the situation as to pyrites in the southern deposits. If this bill is enacted into law, what would you suggest that the Government should do in that particular case under the law?

Mr. WHITE. There are several alternatives provided in this law for meeting a situation of that kind. It does not seem a matter of very great difficulty to suggest which of those alternatives might be used because of the fact that the knowledge is not quite sufficient to render judgment on them. The alternative which the bill provides is that a guaranteed minimum price might be established for a maximum period of two years. That is one alternative. The second alternative is that the Government might enter into contracts for material in case a minimum price is established, not below that price, but they might not use the price at all.

I should say under the circumstances that a reasonable price should be determined on and guaranteed as a minimum price, probably by

zones throughout the country. Here, for instance, would be a zone close to the market, in which stimulation would produce the slightest transportation problem.

In Colorado, for instance, the price of pyrites at the mine is much less than it is in Alabama. We could get the pyrites from Colorado, if it were not for the transportation difficulties. I think that we could get a considerable quantity on three months' notice. We could get a large quantity from Colorado from existing mines. That is the condition in Butte. You could get rhodochrosite in Butte as a material from existing mines.

Mr. KELLEY. Nine hundred feet under the surface.

Mr. WHITE. But ready for quick development.

Mr. KELLEY. Nine hundred feet away from the shaft. I do not want to indulge in argument, Mr. Chairman, but it occurs to me if those pyrite deposits in Colorado, on three months' notice, can supply this country, if it is that close to a productive stage, it should not require a great deal of legislative assistance, and it should not require a great deal of subsidy, because the capital expenditure can not be great to put that business on its feet and start it going.

Mr. WHITE. It costs just as much, however, to deliver Colorado pyrite in the market where the consumption is as it would cost under a reasonable guaranty of price, which would be sufficient to increase production from near-by sources, which could be very quickly and readily done.

Mr. KELLEY. Mr. White, the question you are raising is one of judgment, of how to administer this thing, I would say, whether it was apparently wise to develop this area or that area, and we would have to be very careful upon the question of what liability the Government might incur. We are assuming, as you suggested before, that Government employees or agents might be fairly good business men in a business transaction, but presumably this administrator would not go to the point of obligating the Government for large sums unless that was probably the only most efficient way.

Senator POINDEXTER. To what extent can the Government financially oblige itself under this bill?

Mr. WHITE. The only financial obligation, as the bill stands, is either through the guaranty of a minimum price or of making Government contracts for the output of the mines, both of which may take place for a maximum period of two years.

Mr. MACBETH. May I ask the privilege of returning to a question with Mr. Kelley?

The CHAIRMAN. Certainly.

Mr. MACBETH. We will have Mr. White with us right along, but Mr. Kelley is compelled to leave the city. Mr. Kelley, a few days ago one of the proponents of this bill made a statement that he favored price fixing. He said that the price fixing on grade A spelter at 12 cents a pound had stimulated the production of that article. Now, as you are one of the manufacturers of grade A spelter, will you kindly state the effect the price fixing has had on the stimulation of grade A spelter?

Mr. KELLEY. In the first place, there was no price fixed on grade A spelter. I do not know to whom you refer, but there is an error somewhere, because here is the situation as far as grade A spelter is concerned:

About two months ago—possibly longer than that—or within the last few months, a maximum price of 12 cents was established on grade A spelter, but that was not a definite fixed price. As a matter of fact, grade A spelter is selling under that price now, and has been for some time. As far as I know that price did not increase the production of grade A spelter, because before the price was fixed the average price realized for grade A spelter last year was 15.6 cents a pound. That was what the gentleman probably had in mind, the thought probably was that there had been an increase in the visible supply of grade A spelter due to reduction of specification by the Ordnance Department from 99.85 zinc to 99.50 zinc, thereby permitting entrance as grade A of redistilled spelter, whereas theretofore I think the Horsehead and Anaconda Electric had the only two brands that met the requirements.

There has been no increase of production of grade A spelter that I know of as a result of fixing the price at the maximum of 12 cents.

Mr. MACBETH. Kindly advise the committee of the effect of the price fixing of copper at 23½ cents, what it has had on the production of that metal?

Mr. KELLEY. That is a rather difficult question to answer. The copper production of the United States reached its peak about a year ago—just about a year ago—in April or May of 1917. At that time copper was selling for more than 30 cents a pound. During the summer months, in anticipation of price fixing, the price declined and the production decreased very much, not as a result of that primarily, but due to labor disturbances and strikes in the copper field. The production fell off very markedly from June and onward through the fall months, and it has never gotten back to where it was a year ago. Since the first of the year the production has fallen off somewhat alarmingly among all producers and is continuing to drop off, due primarily to shortage of labor. The price of 23½ cents did not increase production certainly, and I do not think it was primarily responsible for the big falling off of the production. I think there were other causes.

Mr. MACBETH. Has it resulted in the small producers decreasing their production?

Mr. KELLEY. A good many of the small producers have decreased their production and a good many have gone out of business temporarily; in the aggregate the amount of their production is not a considerable factor in the copper business, I think. Of course, there is much to be said about price fixing in the copper business. To the shortage of labor is due the inability of the copper companies to compete for labor.

Senator POINDEXTER. With the Government?

Mr. KELLEY. With the Government and with other industries; but if we had a higher price we could compete just that much more effectively than we can now, and in that way we could keep production going.

Mr. MACBETH. There is one metal upon which you did not touch, and that is antimony.

Mr. KELLEY. Yes.

Mr. MACBETH. Antimony is one of the metals included in this bill.

Mr. KELLEY. Yes. Well, I did not touch upon antimony because

the tonnage is comparatively small, as I remember. As far as the production of antimony is concerned, there is a lot of antimony in our ores. I do not know what you would have to do to take it out. It is usually a waste product except where high-grade antimonial ores are mined for the antimony primarily.

About a year or two years ago there was a very big increase in the price of antimonial lead, which led to quite a considerable production and purchase on this continent—not necessarily in this country—of antimonial ores. That was followed by a rapid decline in price, and since then I think the antimony production has fallen off.

Mr. HEWETT. I would like to ask Mr. Kelley a question. What was the purpose of the Anaconda going into the manufacture of pure manganese? I think Mr. Kelley states that a patriotic motive enters into it.

Mr. KELLEY. It enters into it somewhat; yes, sir. I will tell you the fact of the matter is this, that it was in connection with our conference with the War Industries Board that the matter was broached seriously, and when we first looked into the question the amount required for plant and equipment seemed to be large. Subsequently we found that by the adaptation of a very large amount of plant and equipment we had, we could, with the expenditure of approximately a million dollars on top of the plant, that stood at a million and a half dollars, go into the business on a big scale, and we thought the profit was sufficiently attractive to warrant our doing it, although there were certain reasons why we would have preferred not to have gone into the business if we were looking solely to that side of the matter.

Mr. HEWETT. Bearing on that, as Mr. White said, there is a prospect that the Anaconda Co. will make about 10 per cent of the total needs of ferromanganese.

Mr. KELLEY. I think more than that.

Mr. HEWETT. More or less. Is it wise for the country to depend upon patriotic motives to make use, you might say, of unused visible resources?

Mr. KELLEY. I do not quite get the pertinency of the question. As I understand it, it is wise for the country to depend, and the country can depend, upon that active and sympathetic cooperation that is maintained between different branches of the Government and the business enterprises of the country since the day the war was declared. I do not mean to say that the country should ask anybody to engage in business as a matter of patriotism. It should be prepared to see that we obtain an adequate profit out of the business, but I do not think that necessarily implies that the Government should be any more than fair about the matter and fair about this legislation. I do not think that it means that the Government should go around handing out bonuses to every fellow who thinks he has a mine—and God knows there are millions who want to get a crack at it. I do not know of any man in the world who is more convincing or more hopeful or more sincere than the fellow who thinks he has a mine anywhere from Alaska to Tierra del Fuego, and in nine hundred and ninety-nine cases out of one thousand he has not anything that looks like a mine.

Senator POINDEXTER. He gets a lot of happiness out of it, though.

Mr. KELLEY. He does, but he gives the rest of us a lot of misery.

Mr. HEWETT. The situation in the manganese industry has sifted down to this: The country probably needs so much manganese ore. A part of this will be produced here and a part will be imported. An adjustment in processes may permit some low-grade domestic ores to be used in place of imported high-grade ore. The extent to which imports are maintained is largely, you may say, based upon the representations of the American Iron and Steel Institute, which is a group of consumers. The price of domestic ore at the present time is governed in large part by the price of imported ore. Now, supposing the country wishes to save 100,000 or 200,000 tons of shipping in the next year or two, is it going to continue the rate of imports and the present prices of Brazilian ore, which are arbitrary and do not reflect the risk of transporting it, or is it going to permit the price to rise according to the principle of supply and demand which, I think, is only in part effective, and produce it from the domestic deposits? In other words, while you have on the one hand a limitation of price because you can get foreign ore, the limitation in price hinders production because people will not go into the business of mining at those prices.

Mr. KELLY. My answer is that the Government should take an intelligent look at the situation and see what the actual domestic situation is and then it could tell the steel people that they would have tonnage enough to make up the actual deficit that would occur and make them use domestic ore, and that would result in an enhanced price, and you would get it as fast as developed—you can not get it any faster than it can be developed, no matter how much money you put behind the proposition.

Mr. HEWETT. Nevertheless, as Mr. White has said, if the Government will guarantee a price, which will probably be a minimum for a certain period, would it not get more ore than if the situation is allowed to drift?

Mr. KELLEY. I can see the vice of the situation as you bring it out, but it is not, as I understand, an argument in favor of this legislation. It would be to stop importation and bring it down to a bare industry—strip it to the bone.. We could not interest anybody in manganese ore until less than six months ago. They said they had two years' supply—the big steel corporations. They did not want to buy manganese ore. It was only by main strength that we got our ore tested out and tried out.

Senator POINDEXTER. Where do you get that ore?

Mr. KELLEY. In Butte.

Senator POINDEXTER. In connection with copper ores?

Mr. KELLEY. No, sir; in connection principally with zinc ores; it is in the same vein as zinc ores. As you know, there are millions of tons of manganese ore in Butte that is too low grade to be worked or handled economically under existing conditions. You know that the pyrolusite supply there is practically unlimited, but, of course, you get into the question of low-grade manganese and high silica, and I do not know what you are going to do with it.

Senator POINDEXTER. In what percentage does that ore generally run, that manganese ore that you have?

Mr. KELLEY. The carbonate of manganese runs from 34 to 41 per cent manganese.

Senator POINDEXTER. That is a pretty high grade, is it not?

Mr. KELLEY. It is what you would call a second grade, would you not?

Mr. HEWETT. Although it contains less than 40 per cent of manganese it contains little silica and the ratio of manganese to iron is such as would permit its manufacture into standard ferromanganese. Very few ores other than the carbonate may be so treated when they contain less than 40 per cent manganese.

Mr. KELLEY. As soon as the ore is roasted, the carbon dioxide is driven off.

Senator POINDEXTER. Do I understand you to say that you have extensive deposits of that?

Mr. KELLEY. Yes, sir; I do not know how extensive, because we have not done sufficient development, but I think a conservative estimate of what we have opened up this year would be 100,000 tons in that one mine.

Mr. HEWETT. How about the Alice?

Mr. KELLEY. The Alice vein at the surface has a lot of manganese, but there is no rhodochrosite in it.

Mr. WHITE. Have you found that the reluctance of the consumer to use new sources of supply or new sources of ore, has been a retarding factor in the development of new ores?

Mr. KELLEY. I think it should be the business of yourself and myself, and everybody else, to fight constantly to prevent becoming subordinate to certain ideas, and that applies in every trade and in every industry, where there is a natural desire to go along in the same old way. Take the matter of magnesite, which is covered by the provisions of this bill. Prior to 1914 the magenesite that was used in this country, which ran up into hundreds of thousands of tons came from Austria or Greece. When the war was declared, one of the first things we did was to go into the market and buy all the magnesite that we could get hold of, because our converting operations depended upon it.

We had the matter up. There was no magnesite in this country that was good for anything—in Canada, California, or anywhere else. Last year we developed magnesite in this country, I think to the extent of over 300,000 tons, and we never hear of it. We never hear of it as an article with respect to which there has been any sort of hardship in the industry caused by a lack of our importation of it. Now the price went up. We had to pay more for magnesite brick, but we got it and we used it. People when they have to do things, will get down to it and do them readily. Of course, no blast furnace is going to take a low grade of manganese ore with a lot of silica in it as long as they can get stuff that will melt up and run the steel out to better advantage, and as long as they can get it without absolute injury, they should not be required to, because they would cut down the output of the steel furnace and use other ore. They will get along some way.

Mr. WHITE. Is that not one of the factors that is preventing the development of manganese, possibly. I have in mind this illustration that came to my attention. There were some parties in the Cuyana Range in Minnesota that early in the winter had a deposit of low grade manganese ore which they wanted to develop. They

were willing to contract at a very reasonable price for its development. When the lakes are frozen over the labor situation is easy on Cuyana Range and they wanted to take advantage of that easy labor situation in sinking a shaft and opening up the deposits. They could not get contracts for that lower grade right at that time. Within four months of that time they were able to contract for that material. The consumer did not foresee the shipping situation, which might have been foreseen—it was announced in every way that the shipping situation was going to come.

The administrator of this bill would be in a position to know that situation. The only point I am making is that there is an interval of four months between the consumer's decision to use the material which he can use, and which he has used, but which he will not use as long as he could expect to get the imported article.

So time is one of the factors. It could have been foreseen, it was foreseen, except for the consumer's reluctance to change any of his habits as far as the source of his supply was concerned. That is one of the factors which we assume this administrator might have foreseen and have entered into a contract with that man at a reasonable price and to go ahead and facilitate the development of his material, and then when the consumer finally got to the point of foreseeing that he would have to establish it, and would be willing to establish it, the contract could have been turned over to him on the part of the Government with no financial loss. It was simply a matter of a little foresight being exercised. The inertia of the consumer could have been exercised and he would have been four months nearer getting the material. That is a part of the workability of this bill.

Mr. KELLEY. I think it is up to the Shipping Board. I do not think the reluctance on the part of the consumer should govern such radical legislation as is proposed by this measure.

Mr. WHITE. The Shipping Board's attitude, if I may point it out—I have come into contact with it at conferences—was this, that it is a very serious thing to curtail imports unless there is a visible supply. They feel the responsibility of that. In the conferences they said to these men who came here, "Are you going to produce that amount of material? If you are, we will curtail the imports." But somebody on the Shipping Board can not look ahead far enough to say, "We will curtail it before we can see any production. Somebody has got to take steps to get that production as this curtailment of imports proceeds.

Senator POINDEXTER. You have spoken a good deal about priorities and about embargoes—I have not examined this bill as carefully as I expected to—but is there anything in it that gives any power to the Bureau of Mines to grant priorities or to place embargoes?

Mr. WHITE. There is no authority conferred in this bill to deal with the priority situation. The only relation to the priority situation which this bill might have would be that of the creation of such a central administration as would enable that body to make recommendations to the transportation agencies who have shown themselves only too willing to meet a real emergency condition when it was presented properly and authoritatively to them. Now that has been partly done by the existing agencies. The Shipping Board has attempted to do a certain amount of it; they have been forced to

do it reluctantly because they had no organization to do it with. The War Industries Board which is primarily, as I understand, organized to handle Government contracts and to make Government purchases, has done a good deal of that, but largely in the same way, without an adequate organization. If you are going to recommend a priority, it involves your knowing that it is a just and fair case, because it means that somebody else is not going to ship his product if your product is given priority. So the Interior Department has been called upon to furnish material and information, to examine the localities and deposits, as to whether they are worthy priorities to recommend; as to whether manganese was more important that some other material, and it is a very serious situation without an adequate organization and thorough knowledge of the situation.

These other agencies which now exist have all been dealing in a way with priorities. The transportation people are only too willing to do the best they can if they can get reliable recommendations. The shipping question is something that might be handled by such central administration much more effectively than it has been in the scattered way in which it is conducted at present.

Senator POINDEXTER. But I understood you to say just now that this bill does not give you any power in either one of those respects?

Mr. KELLEY. Mr. White is in error with respect to that. If you will look at section 13 of the bill you will observe that it authorizes the establishment of rules for the production, sale, shipment, distribution, apportionment, and storage among dealers and consumers.

Mr. WHITE. The point was, however, that for the materials contained in this bill there might be some control of transportation. But as to the question with respect to the transportation of a product outside of those mentioned in this bill or one of these materials, there would be no authority whatever.

Mr. KELLEY. I beg your pardon. Then I did not understand the question. You would get into the same condition that existed between the Fuel and Food Administrations, only you would have an additional priority board.

Mr. WHITE. At the present time the thing has no recognition. The other things have an administration to secure priorities for them. These particular minerals have no such definite representation where other people are represented and naturally those who are not represented lose out more or less.

Senator POINDEXTER. Under your present authority you have the agencies for investigation and opportunities to interest yourselves in requests for priorities and to make recommendations, and I assume that the priorities board, or the officials of the Government, would be very apt, in a matter within the jurisdiction of the Bureau of Mines, to act on its recommendations. All that you have at the present time without the passage of any additional law.

Mr. WHITE. The only proposition is the fact that there has been an inadequate organization to handle these things, which has now been provided for by special appropriation. That has been one of the factors. For instance, in this graphite situation, the producers do not know to whom to present that situation, and a good deal of trouble developed before they found the proper approach to have that situation remedied. In the meantime a very serious injury

had been done to their industry. A man way out West producing material does not know the possibilities of securing certain priorities, and before he finds out oftentimes he is not in the position of the larger companies who have facilities for finding out how to accomplish these results. The whole question involved in the matter is to be able to get back to the producers who are having trouble and to have just action on the situation, and it requires a much larger organization to effectively handle it than any that now exists. I do not mean, of course, to say that the War Industries Board can not handle the priority situation, but they have not at present an organization to handle the priority situation and make investigations. Of course, they have authority to call on us for investigations, and through them, through their own efforts, we have taken up the question of priority but we do not feel that we have a proper organization to secure proper and just priorities in many of these cases.

Senator POINDEXTER. I think those are quite important points in the consideration of this bill. That part of it could be reached simply by an increased appropriation and an enlargement of your existing force.

Mr. KELLEY. May I suggest that the entire railway operation is now in the hands of the Government administration; that nobody knows the importance of these things more than the traffic men of this country. The situation as developed last winter was beyond human possibility to prevent. Mr. White—perhaps inferentially—I do not think he would state it directly—attributes the clearing up of the graphite situation to the interposition of the influence of his bureau. Now, that is not true. The New England traffic situation cleared up, as we are told this morning, about the 1st of April, and that is when the sun came out and the temperature went up and the steam locomotives began to work. There is no priority board that can bring freight over lines that are congested by snow and zero temperatures. It can not be done, and as far as embargoes and priorities are concerned, they are necessary to some extent, but to the most limited extent possible, because the moment you give a priority for one thing you sidetrack another, and there is not any doubt that the traffic situation last winter was intensely aggravated by priorities that were issued in the beginning by the Fuel and Food Administrations, in my judgment.

Mr. MUDD. In the discussion this afternoon, it seems to me that one factor has been overlooked. Mr. Kelley, I am sure unconsciously, has taken the point of view of the large business enterprises. He represents a company which has probably the best technical advice of any enterprise in this country in similar lines. They have large resources, and instead of looking to the Government for assistance, in several cases the Government has looked to them for assistance and advice. What I have said referring to the large companies does not apply to the multitude of small producers scattered throughout the country who are not familiar with conditions surrounding the mining of something entirely new and foreign to them. They do not know the condition of the markets and do not know the situation in regard to shipping, and as to that they are not fully advised, and they are not familiar with mining methods, and anything which will give them assistance and which will stabilize their market is going to serve to stimulate the production of the small mines.

The statement has been made that if there is a manganese deposit which requires money for its development or equipment there are many exploration companies which are ready to make that investment. That is not so in the present circumstances. There are many small deposits, which by their very limited size are not attractive to a large enterprise. I think Mr. Hewett will confirm my statement when I say that perhaps half the manganese production in this country comes to-day from mines perhaps less than half producing 5,000 tons a year. It is going to be extremely difficult to interest large capital, or any capital at all, in those mines. They have got to do it on their own resources. Any form of guaranty price over a period of two years, or a shorter period if necessary, will serve to induce those people to go into the business, whereas it might not prove so to a large enterprise which is fully competent to handle the situation itself.

The CHAIRMAN. Mr. Mudd, as I understand it, the Bureau of Mines is prepared now to give these people all the advice they desire in regard to shipping and the market, and all such things as that?

Mr. MUDD. We try to give them what technical advice they need, but we are not in a position to advise them in the matter of making these investments.

The CHAIRMAN. You are not in a position to stabilize the market, but you are in a position to give them all the information that they want relative to the market price and where the productions are?

Mr. MUDD. Just as far as our knowledge will permit we try to do that. We do the best we can, nevertheless we are not in a position to give them what they really want quickly, a market for the material which they produce. We have a man who is mining manganese, and his first shipment has fallen considerably below what he thought it would analyze. The result has been a disagreement and a conflict as between producer and consumer. Because of that fact, and because of the lower price which the producer has received, he becomes discouraged and goes out of business. We do not want to do anything to prevent what we want to do, increase production.

The CHAIRMAN. Mr. Mudd, I will say that you will be given full opportunity to be heard later. Mr. Kelley is anxious to leave the city, and if you have any direct question to ask him, you may ask it, but we must cut down this general discussion as much as possible because it is late in the afternoon. Later you will have full opportunity to put into the record everything you have to say in regard to this question. Have you any direct question to ask Mr. Kelley?

Mr. MUDD. I will ask him whether he does not think this bill will serve to stimulate production among the small operators?

Mr. KELLEY. No, I do not. I will tell you what I think about this bill. If, in the last analysis, every man is going to look at this bill from his own individual standpoint—if he is going into a business that is surrounded by the dangerous pitfalls that are in this bill, where he becomes absolutely unable to form any judgment about his own business, he is going to hesitate to do it.

This bill, in my judgment, will have the effect of turning this entire business over to the Government. There would not be room for the independent operator and the Government except through cooperation to guarantee prices, et cetera. I think that undoubtedly, as far

as mere stimulation of the output of the small producers is concerned, that a minimum price would help that, and it is going to help business in the long run.

Mr. MUDD. It is going to help us to secure an immediate supply, however.

Mr. KELLEY. I doubt that very much. I think the manganese situation is pretty well understood. We will come back to manganese and pyrites. What justification is there for having the sulphur business or the arsenic business, or fluorspar, or the innumerable other elements enumerated in this bill? You can not base a bill to regulate the whole industry upon an isolated case, or one or two metals, it seems to me.

Mr. MUDD. Every one of them, I think, has some justification, although it may not be apparent. It would require a good deal of time to go into the justification for each particular one. The statistics which you brought out at the beginning of the hearing are correct, and whether they show an increased production of 10 per cent or 300 per cent, it does not imply that we are producing to our full extent. We have had a marvelous production of chrome, yet if we trebled it, it would barely meet our own requirements.

Mr. KELLEY. You are in error if you thought I was arguing that the business was stimulated to the point of taking care of the needs. The point I was making was that without legislation this wonderful increase had come, and it is not going to stop to-day or to-morrow; it is going on every day, and I do not believe it is necessary to legislate for stimulation; you have got it. Now, whether you have it as rapidly as you would have without the bill is a matter of opinion. I do not insist upon my view, but I think that things are going pretty well. I am no pessimist about the situation.

Mr. MUDD. You spoke about sulphur requiring stimulation. Sulphur does not require stimulation. The sulphur problem and the pyrite situation are so interlocked that you can not control it to meet the pyrite situation unless you enter the sulphur situation and are prepared to meet it in the same way. That, briefly, is the justification for sulphur.

The CHAIRMAN. Is that all you have to say, Mr. Kelley?

Mr. KELLEY. That is all.

The CHAIRMAN. The committee will now adjourn until to-morrow morning at 10 o'clock.

(Accordingly, at 5 o'clock and 5 minutes p. m., the committee adjourned until to-morrow, Thursday, May 16, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

THURSDAY, MAY 16, 1918.

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met at 10 o'clock a. m. pursuant to adjournment, at room 450, Senate Office Building, Senator Charles B. Henderson (chairman) presiding.

Present: Senators Jones of New Mexico and Baird.

Also present: Dr. Van H. Manning, Director of the Bureau of Mines, and Dr. George Otis Smith, Director of the Geological Survey.

## STATEMENT OF MR. D. G. KERR, VICE PRESIDENT UNITED STATES STEEL CORPORATION.

The CHAIRMAN. You have examined the bill under consideration by this committee, have you not?

Mr. KERR. Yes; sir; I have read it.

The CHAIRMAN. You have read over also the rare metals mentioned in this bill?

Mr. KERR. Yes, sir.

The CHAIRMAN. What metals mentioned in this bill do you use in your business?

Mr. KERR. Largely manganese and chrome.

The CHAIRMAN. Will you take up the use of manganese in your business and the situation relative to chrome at this time, where you get it from, and the uses to which it is put, and the necessity of your having plenty of manganese in order to carry on the business that you are conducting.

Mr. KERR. The manganese ore is used largely in the production of what is known as ferromanganese, also called ferro and spiegel. The metals ferromanganese and spiegel are used in the production of steel as a deoxidizer, and for recarburizing. As yet there has been no other metal or substitute found for manganese in the production of steel. Of course, you can make steel, but of a very poor quality, without the use of manganese, and we think it very essential at this time that we have sufficient manganese ore to produce ferro and spiegel to give us the requisite amount required in the production of steel, both from the standpoint of quality and production.

Our supply of manganese at the present time—I am speaking from the corporation's standpoint now—is obtained from two sources, foreign and domestic ore. The foreign ore comes from Brazil and a small tonnage from India. The domestic ore comes from various States. I would say the largest tonnage of domestic ore is coming

from Montana at this time. We have large contracts for ore from Brazil. At the present time there is about 370,000 tons still due on contracts. We have about 40,000 tons in stock on an island in Rio Harbor, and we are taking very little from that stock on account of no boats. I understand the railroad in Brazil is not transporting ore at this time from the mines to Rio. It has been estimated by the alloys committee, a committee appointed by the Iron and Steel Institute committee to go into these various alloys, that the steel trade requires 35,000 tons a month of ore from Brazil, and we are not getting it, and we should be getting it, and if we do not get it and get it quickly I think we are facing a shortage of ferro and spiegel in this country.

The United States Steel Corporation has in stock at the present time, or had at the first of the month, 170,000 tons of manganese ore suitable for the manufacture of ferro or spiegel. We consumed last month a little over 11,000 tons of ferro. We have in stock of ferro about a month's supply, and if you figure that it requires about 2½ tons of ore per ton of ferro, our supply is not very large.

The CHAIRMAN. The United States Steel Corporation uses more manganese ore than any other company in the United States, does it not?

Mr. KERR. Yes, sir; on account of producing more steel than any other company.

The CHAIRMAN. Where did you get your manganese ore from before the war?

Mr. KERR. From Brazil, India, and Poti; that is a shipping point on the Black Sea.

The CHAIRMAN. The supply coming through the Black Sea is entirely cut off now, is it not?

Mr. KERR. Yes; it has been since the war.

The CHAIRMAN. And you have been relying largely on Brazil for your manganese ore?

Mr. KERR. We have.

The CHAIRMAN. You spoke of a committee. I wish you would explain to us the way in which you have been handling the situation up to the present time through the War Industries Board.

Mr. KERR. The committee I refer to is a subcommittee on alloys. This committee was appointed by the members of what is known as the committee on steel and steel products of the American Iron and Steel Institute. Their object is to meet from time to time and take up the question of production of spiegel and ferro and the supply and demand of both spiegel and ferro, as well as other alloys used in the production of steel. If anyone attending the meetings says he is short of ferromanganese or manganese ore, the other members of the committee are asked if they can help out. If they can, they will. For sake of illustration, a short time ago the Lackawanna Steel Co. was short of manganese ore.

The steel corporation had some coming in at that time, and they diverted a cargo to the Lackawanna. Later on E. E. Marshall, of the Dunbar Furnace Co., was short of foreign ore. The corporation diverted a cargo to Marshall. Within the last two weeks E. J. Lavino, of Philadelphia, was short some Brazilian ore to make up a cargo; the corporation filled the cargo. Marshall at the present time—that is, during this month—expects to give the corporation a

cargo. In other words, it is reciprocation, and we are trying to work together to meet the demand in the way of spiegel and ferro by utilizing the ores to the best advantage.

The CHAIRMAN. Who is at the head of this committee?

Mr. KERR. Mr. J. A. Farrell, president of the United States Steel Corporation. I might say that Judge Gary is the chairman of the main committee on iron and steel products.

The CHAIRMAN. Has the arrangement that this committee has worked out with the War Industries Board been satisfactory?

Mr. KERR. I think so.

The CHAIRMAN. Do you feel that the situation can be handled through that committee?

Mr. KERR. I do.

The CHAIRMAN. Do you think it is necessary to have legislation such as is proposed here at this time?

Mr. KERR. I do not; not at this time.

The CHAIRMAN. I should like to have you explain to the committee why you feel that way.

Mr. KERR. The alloys committee, I think, are getting the desired results at the present time. Why change it? There are some things that can be done to help the general situation. I will refer to one thing and that is the railroad rates on ore from Western States. The rates from quite a number of places are put on the basis of the value of the ore through the smelter, the miner does not know what he is going to get when he ships his ore; this is a mistake. He should know when he brings the ore to the shipping point on a transcontinental line what he is going to get for that ore.

The CHAIRMAN. Why is it he is not able to know to-day what he is going to get?

Mr. KERR. On account of the freight rate to the point of consumption; the freight rate is based on the value of the ore through the smelter. I would suggest the elimination of the value of the ore through the smelter and make a flat freight rate from a certain point, leaving out the question of valuation. Furthermore, a better supply of cars to points where manganese and chrome can be shipped should be given. Recently there has been a meeting of a subcommittee of the alloys committee, and they have gone into this question of the amount to be paid to the producer when he delivers the ore f. o. b. cars, shipping point. Heretofore the miner in some instances was only getting—I should say the producer, probably—50 per cent of the estimated value of the ore, the other 50 per cent when the ore arrived at destination. The movement of cars on the railroads at the present time is pretty slow, and a man might have to wait a long time, so it has been decided to pay the producer 80 per cent of the estimated value against bill of lading weights. Attached to the bill of lading is a certificate of analysis by an approved chemist and sampler. This is fair, I think, to both the consumer and the producer.

Senator BAIRD. There is no way you could give the miner a flat rate on the cars, is there, so he would know just what he was getting? I suppose that has to go through a test of value?

Mr. KERR. You have to analyze the ore, Senator. Do you wish me to illustrate?

Senator BAIRD. Yes, sir.

Mr. KERR. Some ores are more valuable than others; take manganese ore, not only in metallic content of ores, but the impurities. For the sake of illustration, an ore which will run 30 per cent metallic manganese is worth so much per unit; if it runs 45 per cent, it would be worth so much per unit. The impurities that affect the value of the ore are phosphorus and silica. If it runs over a certain percentage of silica, it should be penalized on account of the amount of flux required to take care of the silica in the blast furnace, the increased cost for coke, and decreased production. In other words, the old practice was that for each pound of silica it required 4 pounds of limestone.

Senator BAIRD. It would then be impossible to make a price at the mine?

Mr. KERR. Impossible? I think not practicable.

Senator JONES of New Mexico. Mr. Kerr, the claim has been made here that it is necessary to handle the manganese ore in some rather close way for the purpose of conserving tonnage in the importation and to aid in that conservation of tonnage to develop the domestic ores. From what you say I understand that there is considerable difficulty now in getting transportation for the domestic ores already produced over the railroads, and if we were to really enter upon the domestic production would that not put an additional burden upon the railroads of the country?

Mr. KERR. I did not mean to imply that it was on account of lack of railroad facilities that we are not getting this tonnage, but we were not able to pay the miner what he was entitled to as quickly as we should on account of the time that it takes to transport the ore from the point of shipment to the point of destination. I do not think there is sufficient manganese ore in this country, at least of known deposits at this time, to take care of the requirements of this country. Does that answer your question?

Senator JONES of New Mexico. Yes; in a measure Now, this is news to me that a freight rate is fixed by the value of the ore determined at its destination. Who pays the freight, the miner or the steel company?

Mr. KERR. The steel company. I will illustrate it in this way:

Let us take Chicago for the sake of illustration as the basing point, because that is the point where most of the western ores are consumed; that is, in a blast furnace. We put a price on the ore at Chicago. Suppose there is a man in California producing ore, what is that ore worth to that man at shipping point? You take the scale price at Chicago and determine what it is worth to him there, deduct the freight and moisture, and that will give you the value of the ore at that shipping point, and it applies to any other part in the West, North, or South.

Senator BAIRD. You have not got the quality there?

Mr. KERR. Then, to go further, you asked who pays the freight. The shipper pays the freight. The trouble is the freight rate from some places is based upon the value of the ore through the smelter. Quite often neither the shipper nor the buyer knows what that rate is until the ore has reached destination.

Senator JONES of New Mexico. Is that not an unusual way of fixing a rate freight?

Mr. KERR. I do not think it is a good way.

Senator JONES of New Mexico. I am inclined to agree with you, not knowing anything more about it than I do.

Mr. KERR. I think that originated from the transportation of precious metal ores, such as gold and silver, and of course manganese and chrome are a little bit different from that.

Mr. MACBETH. Mr. Chairman, that applies to shipment of all ores.

Mr. KERR. It does?

Mr. MACBETH. Yes, sir.

Senator JONES of New Mexico. Has that matter been taken up with the traffic department?

Mr. KERR. It has.

The CHAIRMAN. That custom has been in vogue for years.

Mr. CALLBREATH. May I say that has been in effect in order to give low-grade ores the benefit of the lower-priced freight in order to stimulate their production, the higher rate applying to the higher-grade ores, which could stand the cost.

Senator JONES of New Mexico. Then that rate is based upon the old idea of charging what the traffic will bear?

Mr. CALLBREATH. To some extent, Senator, but I have in mind an instance in Colorado where after the silver depreciation the ores of Aspen were of so low a grade, or the value was so low, they could not stand the smelter and freight charges, and effort was made on the part of the Denver Chamber of Commerce to reduce the rate on silver ores from Aspen to the smelter at as nearly as possible the transcontinental freight rate plus terminal charges. They did make a rate very much below their previous rate, which as they estimated was actual cost of transportation, believing that by giving that rate they could maintain the town of Aspen and make profit on the ingoing freights and merchandise. It was done as a matter of stimulating and supporting a town which otherwise would be obliged to go out of business.

Senator JONES of New Mexico. In hauling this low-grade ore the railroad company either make a reasonable profit on it or it does not; and if it does not make a reasonable profit on that ore, then it is charging an unusual profit and an unreasonable profit on something else in order to make up for it.

The CHAIRMAN. Based entirely on the value of the ore, that is the way the rate is based.

Senator JONES of New Mexico. That may be sound railroading, but I doubt if it is sound economy.

The CHAIRMAN. Mr. Kerr, I wish you would explain to us just the needs and requirements of the Steel Corporation so that we may know just what the situation is, and what we have got to meet, whether by railroad or by boat.

Mr. KERR. The corporation roughly requires 325,000 tons of manganese ore, 40 per cent metallic manganese and above, each year. Last year I think we consumed 320,000 and some odd tons. If the production of steel increases this year we will require more. I merely want to repeat, Senator, what I said before. I think we should get at least—I am talking as to the steel trade in general now—35,000 tons a month of Brazilian ore.

The CHAIRMAN. And what are you allowed to import now?

Mr. KERR. Dr. Leith, as I understand it, has made a recommendation to the Shipping Board that we get at least 35,000 tons a month, but it is not coming along fast enough.

Senator BAIRD. Does it come by rail or boat?

Mr. KERR. This is a Brazilian product; it comes by boat from Rio de Janeiro, Brazil.

Senator BAIRD. Can you get the vessels?

Mr. KERR. It is a question of vessels.

Senator JONES of New Mexico. Do you know of any way by which the domestic supply can be increased or stimulated?

Mr. KERR. The points that I mentioned, Senator, with reference to freight rates, better railroad service, and a closer connection with the producer in paying him 80 per cent against bill of lading weights and a certified analysis I think will help the matter to a certain extent.

Senator JONES of New Mexico. Do the producers complain of the present prices which you pay?

Mr. KERR. I have heard indirectly some complaint of prices in certain localities.

The CHAIRMAN. Do you purchase direct from the producer?

Mr. KERR. Do you mean domestic or foreign?

The CHAIRMAN. Domestic.

Mr. KERR. In some instances, but not all, for this reason:

The deposits in this country are largely pockets; some man will only get out a wagon load at a time. That is sent to a central shipping point or a railroad station on a transcontinental line and accumulated with other wagon loads until a carload is obtained; so we have agents in various localities.

The CHAIRMAN. You do not purchase entirely through brokers or middlemen?

Mr. KERR. I would not call them brokers or middlemen. I think I see your point. At a recent meeting of the subcommittee of the alloys committee it was stated that each purchaser of manganese ore should pay the producer a certain price, and anything he paid his agent was in addition to that. In other words, there is no chance for an agent to dicker and reduce the price to the producer.

Senator JONES of New Mexico. What is the miner being paid now as compared with what he got before the war?

Mr. KERR. Senator, there was a very small tonnage of domestic ore consumed by the corporation before the war. We relied largely on foreign ore. In fact, we purchased very little domestic ore. I can give it to you for foreign ore, and it corresponds, I will say, to a certain extent. Foreign ore is costing us at the present time about six times what it used to.

Senator JONES of New Mexico. And what is the price of the domestic ore as compared with the price of foreign ore?

Mr. KERR. Of course it is altogether different. The quality is not the same. The foreign ore you get in bulk; it is from larger deposits and regular. The domestic ore up to date is from pockets and of an irregular character, and it is penalized on account of these irregularities, particularly with reference to silica.

Senator JONES of New Mexico. How much of a penalty?

Mr. KERR. Assuming 10 per cent is the standard for silica, for each unit of silica above 10 per cent and not exceeding 15 per cent it is

penalized 50 cents a ton; for each unit below 10 per cent and not below 5 per cent a premium of 50 cents a ton is given. From 15 to 20 per cent silica, a peualty of 75 cents a ton, for each unit of silica. Below 5 per cent, a premium of $1 a ton is given. That merely gives you an idea of what is considered the influence of silica upon the value of manganese ore.

Senator JONES of New Mexico. Are the foreign ores penalized and given the bonus in the same way?

Mr. KERR. At the present time, no. The majority of ore we are getting from Brazil will not run 4 per cent silica; we do not give a premium for that.

The CHAIRMAN. Do you get any ores from Cuba?

Mr. KERR. No, we do not.

Senator JONES of New Mexico. Taking into consideration this penalty and premium for the domestic ores, how do the prices which you pay for the domestic ores compare with the prices for the foreign ores?

Mr. KERR. Well, that is a pretty hard question to answer. I will tell you why. I am speaking for the corporation now. We have at the present time paid 75 per cent of the estimated value of a certain tonnage of ore on an island in the bay of Rio Brazil. We have over a million and a quarter dollars invested there. Now, how are you going to figure that? We hope to get it out, but if we do not ship the ore we do not get it out.

Senator JONES of New Mexico. Aside from the question of the interest on the investment, how do the prices compare?

Mr. KERR. With domestic ore?

Senator JONES of New Mexico. Yes.

Mr. KERR. I should say it was not quite as high on some grades of domestic ore.

Senator JONES of New Mexico. By not quite as high, tell us what you mean. I wish you would give us some figures to illustrate how nearly the prices approximate each other.

Mr. KERR. Take a domestic ore of, say 44 per cent manganese, we are willing to pay $1.10 per unit of manganese, Chicago. The foreign ore at seaboard I should say would run $1.25 to $1.30 per unit.

Senator JONES of New Mexico. The same quality?

Mr. KERR. No; the price I gave you at Chicago was without the penalties. Now, if the ore is of the same quality I would say it would be comparative.

Senator JONES of New Mexico. Forty-four per cent of ore is pretty high, is it not?

Mr. KERR. I would not say so. Dr. Leith, in making his subdivision of ores, put as first-grade ore 40 per cent and above.

Senator JONES of New Mexico. That is what was running in my mind, that a 40 per cent ore was classed as a high-grade ore.

Mr. KERR. Forty per cent and above is the way Dr. Leith puts it.

Senator JONES of New Mexico. That Brazilian ore, how high does it run?

Mr. KERR. It will run 48 per cent dry; it will run from 43 to 44 per cent natural.

Senator JONES of New Mexico. The point I was really getting at was this: Whether the domestic producer was getting an equal chance with the foreign producer?

Mr. KERR. It is very hard to make a comparison in any way on account of the difference in the quality of the ore, even with your penalty, on account of the irregularities and the small quantity of the domestic ore you can get at any one place at any one time.

Senator JONES of New Mexico. I can understand how it is more desirable to get a large quantity at once and a uniform quality.

Mr. KERR. Irregularity affects your furnace operations, both from the standpoint of quality and production.

Senator JONES of New Mexico. Now, the next point in the inquiry. If you were to want to increase domestic production, would you increase the price? Do you think that would materially affect the domestic production?

Mr. KERR. I do not know of any deposits of domestic manganese ore that by increasing the price would give you any additional tonnage.

The CHAIRMAN. The price is high now, is it not?

Mr. KERR. It is a pretty high price, Senator, but I want to say this: As far as we are concerned, we are willing to increase that price not that we think it will bring out substantial additional tonnage, but we are willing to do it and see if it will and encourage the owners of small deposits.

Senator JONES of New Mexico. The practical question before this committee, Mr. Kerr, is whether in order to increase this production the Government should take hold of the industry and increase the price, or guarantee a minimum price, or something of that sort, and we should like to get your views as to what would be the effect of that sort of control, that sort of operation on the part of the Government.

Mr. KERR. I think the alloys committee, who are composed of practical men, both from the standpoint of production of spiegel and ferro, also steel, are handling the situation at this time as well as it could be handled.

Senator JONES of New Mexico. That committee is now looking into this identical question, then, as I understood you?

Mr. KERR. They are not only now looking into it, but have been looking into it and are trying to do everything they can in a practical way to increase the production of manganese and chrome ores, and decrease the consumption of them in the manufacture of steel.

There was a meeting held in Pittsburgh, Tuesday, May 7, at which there were present 125 representative steel men. The question came up as to how we could decrease, if possible, the consumption of spiegel and ferro and also chrome ore.

The CHAIRMAN. That meeting was called at the request of Mr. Farrell, was it not?

Mr. KERR. At the request of the chairman of the alloys committee; yes. It developed at the meeting that some steel makers were using as high as 5 pounds of chrome ore per ton of ingots. Others were using as low as 1 pound, and in some instances were not using any. The question came up how much the elimination of the use of chrome ore would decrease the production of steel, and it was the opinion that if you eliminated it altogether, you would decrease your production of steel possibly 5 per cent. That determined that it was out of the question to eliminate it altogether. But it was decided what amount of chrome ore, the low grade, 35 per

cent sesqui-oxide and under, could or should be used per ton of ingots produced, and if any steel manufacturer felt that his conditions required larger amounts than that, he should make his request through the alloys committee and get their approval.

Dr. SMITH. Did Mr. Cross state what amount that was?

Mr. KERR. One and one-half pounds per ton of ingots. As to the use of ferro heretofore, a grade of metal running from 78 to 82 per cent manganese was known as standard in the trade. In order to use lower grade ores, the grade was changed to 70 per cent and any one having contracts for the grade 78 to 82 per cent was to take the 70 per cent and consider it a good delivery, provided he got a tonnage and price which was adjusted on a satisfactory basis.

The spiegel in trade heretofore, standard was 20 per cent manganese; it has been reduced to 16 per cent, and consumers having contracts calling for 20 per cent will take the 16 per cent and consider it a good delivery, provided they have a satisfactory adjustment in price and tonnage. The object of making the reduction in the percentage of manganese in both the spiegel and ferro was to enable the producer of ferro and spiegel to use low-grade domestic ores, that could not be otherwise used to an advantage.

Senator JONES of New Mexico. That arrangement then will reduce the consumption of manganese ores considerably, will it not?

Mr. KERR. The high grades, Senator; and that is what we are very short of.

Senator JONES of New Mexico. Can you get a reasonable quantity of the low-grade ore in this country?

Mr. KERR. There are low-grade ores and a considerable tonnage, but some of them can not be used in the manufacture of spiegel on account of phosphorus. Some go up to 0.2 per cent and some 0.3 per cent phosphorus, and in standard spiegel in the trade 0.120 per cent is the limit in phosphorus for 20 per cent spiegel.

I may say that the corporation has changed several of their furnaces that were making ferro 78 to 82 to make 60 to 63 per cent, the idea being to try it out and see if we can not go lower than 70 per cent. We are doing that before we are asking the trade to do it, and if it works satisfactorily I think you will see the trade do the same. We are all working together for the same end.

Senator JONES of New Mexico. Let me ask you if this alloys committee is also working in harmony with the Shipping Board so as to determine the necessary tonnage and conserve that tonnage so far as it may be done, taking into consideration the actual necessities of the steel industry?

Mr. KERR. Yes, sir; it is. At a meeting in New York, I should say three weeks ago, there were present Mr. Farrell, chairman of the alloys committee, Dr. Lieth, representing the Shipping Board, and a geologist from the Geological Department.

Dr. SMITH. Mr. Hewett.

Mr. KERR. No; it was not Mr. Hewett. I do not remember his name. And Mr. Sanford, from the War Industries Board, and at that time it was agreed by all present, including the representative of the Shipping Board, Dr. Lieth, that we should have, starting May 1, boats to carry at least 35,000 tons a month of Brazilian ore to this country.

Senator BAIRD. Can you get them?

Mr. KERR. Up to date we have not been able to get them. But I want to say this: We have to have manganese to make steel. We need the steel.

The CHAIRMAN. One of the other purposes of this bill, as I understand it, is to allow the Government to be a distributing agency; in other words, this administrator, whoever would handle the operation of this law, if it should become a law, would look over the domestic production and get what ores and metals were needed for the trade and then distribute to the various trades what their needs and requirements were. Do you understand that the ferro alloys committee is acting in that capacity at this time?

Mr. KERR. It is. May I read this?

The CHAIRMAN. I wish you would, and tell us just what arrangement they made, if any.

Mr. KERR. This was arranged at a recent meeting of the subcommittee of the alloys committee; it was stated that—

Should any of the companies represented at the meeting import any foreign manganese ore, they would be willing to help out, as far as possible, any company in need of foreign manganese ore, provided a request therefor with reasons for the same was made to the alloys committee and met with their approval.

It was also stated that the same procedure would apply to domestic ores. Does that answer your question, Mr. Chairman?

The CHAIRMAN. Yes.

Mr. KERR. That is what we are doing to-day.

The CHAIRMAN. Then whenever a company needs a certain amount they apply to this committee?

Mr. KERR. Yes, sir.

The CHAIRMAN. And upon that application this committee acts, and it sees that the proper distribution is made to the certain trades as they need it?

Mr. KERR. Yes, sir.

The CHAIRMAN. Who does the ferro alloys committee represent, the consumer or the producer, or both?

Mr. KERR. The producer of ferro and spiegel and the consumers. You might say the consumers and the producers of ferro and spiegel are very closely allied.

The CHAIRMAN. I did not know whether any of the producers of manganese ore were represented on this Ferro Alloys Committee or not.

Mr. KERR. There are no producers of manganese ore, as far as I know on the committee.

The CHAIRMAN. The only difference is the producer wants to get his price and be assured of that and the consumer wants to get all there is in the market?

Mr. KERR. You mean in the way of tonnage?

The CHAIRMAN. Yes.

Mr. KERR. We want to get all the manganese ore we can in this country.

The CHAIRMAN. What has this committee done, if anything, relative to a program of prices? Have they attempted to do anything along that line?

Mr. KERR. Yes, sir. At a meeting held recently, it was stated by those present that they were willing to pay increased prices for domestic manganese ores which showed about 18 to 19 cents a unit above what was known as the old Miami scale. The Miami was a scale gotten out by the Miami Metals Co., who are producers of ferro in the Chicago district, and, as we understand it, they were able, on their scale, to get sufficient tonnage to keep their furnaces in operation. So, in order to see if increasing the price would bring out any additional tonnage or stimulate production, it was suggested that an increased price of about 18 or 19 cents a unit be made.

The CHAIRMAN. Another one of the objects of the bill, as you perhaps have noticed, is to prevent hoarding. Do you know of any hoarding of manganese ores in the United States, or any necessity for such legislation at this time?

Mr. KERR. At this time I do not.

The CHAIRMAN. This bill, as you understand it, would allow the administrator of the bill to prevent the hoarding of any of these rare metals that were needed?

Mr. KERR. As far as I know there is none.

The CHAIRMAN. The price is sufficiently high, at this time, is it, to call out, if there are any at all, the hoards that are in existence?

Mr. KERR. I think so.

Senator SHAFROTH. It was intimated here by one of the witnesses as to some of these metals that the steel companies would not buy direct from the producer, but would buy through a subordinate corporation. Is that true, and if so, what is the object of having a subordinate corporation composed of some of the members of the steel companies?

Mr. KERR. That was the idea in making the statement—that the prices as outlined in the schedule were the prices that the producers of the ore would get, and any broker or intermediary was to be paid by the consumer of the ore. In other words, not to allow your agent to dicker or beat down the producer of the ore. I have heard the same complaint that you have, and that was the object, the consumers of the ore stating they would be willing to pay the producers of the ore the prices named.

The CHAIRMAN. Do you use tungsten to any extent in your manufacture?

Mr. KERR. We do not.

The CHAIRMAN. I think, Senator, it was tungsten that was referred to here.

Senator SHAFROTH. Maybe it was. I do not remember it.

Mr. KERR. We think this is the most satisfactory way to handle it. I should like to read into the record this also:

"The above prices to be net to the producer; any expenses such as salary or commission to the buyers' agents to be paid by the buyer."

Senator SHAFROTH. What is that, an order by the board here?

Mr. KERR. Senator, this is a recommendation of a schedule of prices that the producers of ferro and spiegel are willing to pay for their ore. This recommendation goes to the alloys committee, the alloys committee deals with the War Industries Board.

The CHAIRMAN. I understand that the steel companies have entered into an arrangement or agreement with the War Industries Board for

the production of steel and practically the price is fixed upon that commodity.

Mr. KERR. As I understand it, the War Industries Board, with the approval of the President, has determined maximum prices for steel.

The CHAIRMAN. After that was done, there was an understanding between all the trades, was there not, as to what would be fair prices for the trades to pay for these ores, and then they recommended those prices to the ferro alloys committee, and they considered the matter to determine whether or not the trades had presented a fair price for the ores?

Mr. KERR. This steel committee that you spoke about took it up with the War Industries Board, and if they approved the prices then that was taken to the President, and if he approved it those were the prices prevailing. I do not think any of the prices on domestic manganese ore have yet gone to the War Industries Board, but the schedule of prices proposed at the meeting recently held I think will go to them for their approval.

The CHAIRMAN. They are not in operation yet?

Mr. KERR. No, sir.

The CHAIRMAN. That would practically fix and determine the prices of these ores, so that the producer would know what he was going to get and there would be an established basis of operation, a basis on which to operate?

Mr. KERR. That is it exactly.

The CHAIRMAN. How many of the ores mentioned in this bill have been taken care of that way, through the War Industries Board or this ferro alloys committee?

Mr. KERR. With reference to prices?

The CHAIRMAN. Yes.

Mr. KERR. I think manganese ore is the only one to date.

The CHAIRMAN. Do you get all the chrome you need in this country from the domestic production?

Mr. KERR. Speaking from the corporation standpoint we have been able to get sufficient low-grade chrome ore to keep us operating, but, as I understand it, there is not sufficient high-grade ore to give the tonnage required to make alloys, ferrochrome, which is very necessary in the production of steel, particularly in armor plate and the higher grades, and in forging plants, as you know.

The CHAIRMAN. Where did you get your low-grade chrome from before the war?

Mr. KERR. Before the war we got some little in this country from Canada, but the majority of our ore came from New Caledonia and Greece.

The CHAIRMAN. Are you getting any importations of that ore at the present time?

Mr. KERR. The corporation, no; the Electrical Metallurgical Co. are getting some from New Caledonia, and it is necessary for them to get it, as I understand, in order to produce chrome alloys. And I may say, that at the meeting held in New York a short time ago, at which Dr. Lieth, of the Shipping Board, was present, the question of foreign chrome ore coming to this country was discussed in the same manner as the manganese ore, and Mr. Price, representing the Electrical Metallurigcal Co., went over with Dr. Lieth in detail the

figures of the amount that he estimated would be required of the New Caledonian ore. They did not get together at that time, but they were both present at the meeting in Pittsburgh on May 7, and did get together, and Dr. Lieth made his recommendation to the Shipping Board of the amount of New Caledonian ore that would have to come to this country in order to meet the situation, to produce the alloy.

The CHAIRMAN. Does that amount to a great deal?

Mr. KERR. No; it does not. I can not give you the tonnage offhand; it is not a big tonnage; but it is necessary.

The CHAIRMAN. So far as the low-grade chrome ore is concerned you are practically being supplied now from domestic production, are you not?

Mr. KERR. Yes, sir.

The CHAIRMAN. As to the high-grade chrome ore, is the tonnage there of any large amount?

Mr. KERR. No, sir; it is not, as far as we know.

The CHAIRMAN. As far as you know, it would not make a great deal of difference in the shipping or the importing to this country?

Mr. KERR. The amount, you mean, in this country?

The CHAIRMAN. No; I mean so far as taking up any considerable space in shipping of the high-grade chrome, does it make any great difference?

Mr. KERR. It is not a large tonnage in comparison with the manganese ore. The figures, as I understand, are 35,000 tons a year. What we are asking for manganese ores is 35,000 tons a month.

Senator SHAFROTH. Will you give me the names of the members of the Ferro Alloys Committee?

Mr. KERR. J. A. Farrell, who is president of the Steel Corporation.

Senator SHAFROTH. You say he is president of the United States Steel Corporation?

**Mr. KERR. Yes, sir.**

Senator SHAFROTH. Who is next?

Mr. KERR. C. A. Buck, of the Bethlehem Steel Co. Then there is Mr. E. A. S. Clark.

Senator SHAFROTH. And what is his business?

Mr. KERR. With the Lackawanna Steel Co. Then there is E. J. Lavino.

Senator SHAFROTH. What is his business?

Mr. KERR. He is a producer of ferromanganese and spiegeleisen, and importer of manganese ores and chrome ores.

Senator SHAFROTH. Is he a producer of domestic ores?

Mr. KERR. As far as I know, he is not.

Senator SHAFROTH. Where is his production?

Mr. KERR. Of ore?

Senator SHAFROTH. Yes.

Mr. KERR. Bahia, Brazil.

Senator SHAFROTH. Are there other members of the committee?

Mr. KERR. Yes, sir; A. D. LeDoux.

Senator SHAFROTH. What is his business?

Mr. KERR. Le Doux is in the pyrite business, as I understand it—iron pyrites.

Senator SHAFROTH. As a producer?

Mr. KERR. I can not say.

Mr. WHITE. He is one of the chief importers of Spanish pyrites, and has been developing a small pyrite mine in Virginia.

Senator SHAFROTH. Are there any other members of the committee?

Mr. KERR. E. F. Price, who is connected with the Electric Metallurgical Co., Niagara Falls.

Senator SHAFROTH. Is he a producer of any of these ores, do you know?

Mr. KERR. I can not say that, Senator. I have understood that they have fostered a small proposition in the West. I do not know whether you would call him a producer or not. I do not know that he is producing ore at the present time.

Senator SHAFROTH. Who is the next man?

Mr. KERR. A. A. Fowler, of Rogers-Brown Co.

Senator SHAFROTH. What is his business?

Mr. KERR. The Rogers-Brown people are producers of iron ore, pig iron, and are sellers of iron ore, manganese ore, chrome ore, spiegeleisen, ferroalloy, and other alloys.

Senator SHAFROTH. Where do they operate as producers?

Mr. KERR. In the Lake Superior region.

Senator SHAFROTH. Do they mine any of those ores themselves by hiring it to be done, or do they buy it?

Mr. KERR. Do you mean the ores we have been speaking of—the manganese and chrome ores?

Senator SHAFROTH. Yes, sir.

Mr. KERR. I do not know that they mine any manganese or chrome ores themselves.

Senator SHAFROTH. Who is the next man, if you please?

Mr. KERR. Frank Samuel.

Senator SHAFROTH. What is his business?

Mr. KERR. He is a broker from Philadelphia. He imports ores and alloys.

Senator SHAFROTH. Do you know whether or not he is a producer of any of these ores?

Mr. KERR. I can not say that he is.

Senator SHAFROTH. He does a large brokerage business, does he?

Mr. KERR. I can not say the extent of it.

Senator SHAFROTH. Who is the next man?

Mr. KERR. F. W. White.

Senator SHAFROTH. What is his business?

Mr. KERR. They are large users of chrome ore. You might say chemical business.

Senator SHAFROTH. Are they producers?

Mr. KERR. I could not answer that question. I do not know whether he is or is not.

Senator SHAFROTH. Who is the next member?

Mr. KERR. D. G. Kerr.

Senator SHAFROTH. I was not here when you began your testimony, Mr. Kerr. With what company are you connected?

Mr. KERR. I am vice president of the United States Steel Corporation.

Senator SHAFROTH. Does your company produce any of those ores, or do you simply buy them after they are produced?

Mr. KERR. We buy chrome ore. We are not producers. We produce low-grade manganiferous ore. We are not producers of manganese ore, but we have spent a great deal of money in trying to find properties where we could produce that ore.

Senator SHAFROTH. You are not operating any mine?

Mr. KERR. For manganese ore?

Senator SHAFROTH. Yes.

Mr. KERR. Not at the present time. Recently we authorized our people in the West to make the first payment on a small prospect in California. Whether that has been done or not I can not say.

Senator SHAFROTH. Now, who constitutes the War Industries Board? Can you name them?

Mr. KERR. Senator, I can not give you their names. I do not know them.

The CHAIRMAN. Mr. Baruch is the head of it.

Mr. KERR. Yes; Mr. Baruch is the head of it.

Senator SHAFROTH. Do you know how many members of the War Industries Board are producers?

Mr. KERR. I do not know.

Senator SHAFROTH. Mr. Chairman, has he gone into the question of the maximum and minimum prices?

The CHAIRMAN. No. You might take that up right now, Senator.

Senator SHAFROTH. Mr. Kerr, there has been stricken from this bill by the House of Representatives the power to fix a maximum price. The object of the bill, as I understand it, is to encourage production. It is thought that that could be accomplished by fixing a minimum price. In other words, a guaranteed price that the miner can rely upon for a definite period of time, say, two years, so that he will develop and will find these various metals, and under that theory it is hoped that the production will be so increased by this stimulation that, automatically, under the principle of supply and demand, the increased supply will reduce the price. That is one theory. Now, you have no doubt that fixing a minimum price will increase production?

Mr. KERR. Not necessarily. I made a remark a while ago that so far as I know there is no property at the present time that, by increasing the price, you could get any additional tonnage of manganese from.

Senator SHAFROTH. Well, there is manganese ore in the United States, is there not?

Mr. KERR. There is.

Senator SHAFROTH. Undeveloped?

Mr. KERR. We think there is some that is not developed or found; at least, we hope so.

Senator SHAFROTH. If a minimum price is put upon that, so that the person undertaking the development of it or the working of it, can rely upon at least what he supposes will be a profit, don't you think that would encourage him to undertake development of those ores?

Mr. KERR. I can not say that it would. I think it would depend largely upon what he had and wanted to develop. As far as is known, the deposits of manganese ore in this country, if you call them deposits, are pockety. Some of them would be very costly to

get at, and the tonnage you would get would be very small. If you fix a minimum price, I do not know how you would regulate the price.

Senator SHAFROTH. Of course, if you put a minimum price which would be less than what the man could get it out for there would be no development of it at all. Without a minimum-price guarantee there would be no development of it at all in cases of that kind; but where there may be a lot of mines that may be near the point of paying at the present time, or that would pay at the present prices, if continued for a period of time, would not that guarantee price encourage the owner of the claim to go to development and production, taking what might be called a speculative change of even getting a higher price, but being assured that he would get a conservative amount that may be fixed as a minimum price?

Mr. KERR. As I understand your inquiry, it is this: If you were to put a price high enough, wouldn't you get more people to go out and look for manganese ore?

Senator SHAFROTH. Yes, sir. That is one of the things.

Mr. KERR. That is one, naturally.

Senator SHAFROTH. Then, it would encourage the production of it. Of course, there is some danger that if you fix a price too high, or higher than that which it would sell for under ordinary circumstances, the Government might be loaded up with a large quantity of manganese ore upon which it would have to sustain a loss; but upon the theory of production alone, don't you believe that the fixing of a minimum price would encourage the production of these ores?

Mr. KERR. I think that depends upon what the minimum price is.

Senator SHAFROTH. Well, let the price cover what might reasonably be the cost of production and, say, a profit of 10 per cent. If they were to fix that as a minimum price, and let the principle of supply and demand control the price above that, would not the man naturally, if he were practically guaranteed his costs, says, "Well, that is not very encouraging as a big profit-making venture, but I will do it, because I am assured that I will not lose anything, and at the same time the price may run up considerable." My question is whether a price of that kind, where a man is assured that every ton of manganese ore will be sold at a price which will at least cover his cost and make him a profit of 10 per cent, would not have a tendency to increase mining and thereby increase production?

Mr. KERR. I do not think so. If a man owns a deposit and it is a good one he will want more than 10 per cent over cost.

Senator SHAFROTH. That is the minimum price. Of course, if he were limited, it might not work. That is the difficulty of the maximum price, in my judgment, for instead of being an encourager it is a discourager.

Do you not recognize, Mr. Kerr, that any interference with the general principle of supply and demand is somewhat dangerous in determining whether producers or manufacturers are going to make a success or failure of their enterprise?

Mr. KERR. I agree with you on that.

Senator SHAFROTH. Then your idea would be to interfere with the general principle of supply and demand as little as you could?

Mr. KERR. As a general proposition, yes, sir. But these are extraordinary times and not normal times. We may have to do things to-day that we would not have been allowed to do a short time ago.

The CHAIRMAN. I think we all agree to that. We are doing things to-day that in ordinary times we would not think of doing.

Speaking of manganese ore and ferro, does the Steel Corporation need to carry a stock to meet its needs and requirements?

Mr. KERR. Before the war we aimed to have a year's supply of ore. Do you mean ore or ferro?

The CHAIRMAN. Both or either one.

Mr. KERR. We should always have at least a month and a half stock of ferro and sufficient manganese ore to manufacture our ferro requirements for not less than from three to three and a half months. I will tell you why. You take the large tonnage of ferro consumed by the corporation (it will go over 11,000 tons per month). You can not operate successfully unless you have a stock to draw from from time to time.

The CHAIRMAN. This bill, as you know, has a clause in it relating to hoarding. Would you consider that your company would come within that provision if you had a year's supply on hand?

Mr. KERR. No; for this reason: We are always willing to divide with the other manufacturer and consumer. If a consumer of ferro or spiegel comes to us and asks for tonnage he gets it.

The CHAIRMAN. You have to look to the future and be prepared to meet requirements and needs as they come up.

Mr. KERR. Senator, we feel there is not sufficient tonnage of domestic manganese ore in this country to meet the requirements of the steel trade. The source of supply in Brazil is a long way off, and it takes at least three weeks from the time the boat leaves there to reach Baltimore or Philadelphia. You are taking chances.

The CHAIRMAN. From what domestic source does the corporation get ore now?

Mr. KERR. Some from Montana, some from Arizona, some from California, and we are willing to get it from any source that can produce it.

The CHAIRMAN. How do these areas from the different States compare in grades?

Mr. KERR. They vary.

The CHAIRMAN. That makes it harder in the operation of the business?

Mr. KERR. Yes, sir.

The CHAIRMAN. While, in getting it from Brazil, the grade is practically the same, and you have not the same difficulty in treating the ore?

Mr. KERR. That is correct.

The CHAIRMAN. Has the corporation, say, since July, 1917, used high-grade ore to make spiegeleisen?

Mr. KERR. To make spiegeleisen?

The CHAIRMAN. Yes.

Mr. KERR. It has.

The CHAIRMAN. To what extent?

Mr. KERR. I can not give it to you in tonnage, but they have used a tonnage of Brazilian ore to make spiegeleisen.

I want to say this with reference to spiegel. All companies producing steel can not use spiegel economically. In the first place, quite a number of them are not equipped with cupolas. The cupola is the shaft in which you melt your spiegel and put it into your ladle or furnace in the molten state. Suppose your cupolas could melt this spiegel. The next question is getting it into the ladle or into the open-hearth furnace. In some plants it can not be done—at least, not practically. You might say that it is a matter of time and equipment. I want to say, in a general way, that we, as well as other consumers of Brazilian ore, are cutting its use to a minimum in the manufacture of spiegel.

The CHAIRMAN. You think there are adequate supplies of domestic low-grade manganese ore from which spiegeleisen may be made in this country?

Mr. KERR. I can not say that there is a sufficient tonnage to meet all demands, for the reason that we are getting an increased consumption of spiegel. I will say that there is a very considerable tonnage of domestic manganiferous ore that can be used for the manufacture of spiegel. I can not say that it will take care of all the tonnage.

The CHAIRMAN. It has been intimated here during the course of these hearings that the large consumers of these rare metals were anxious to get governmental aid and assistance and were for this bill, is that so?

Mr. KERR. I do not think we have asked any, and so far as I know, no member of the Alloys Committee has asked any.

The CHAIRMAN. Did you know anything about the bill before you heard of it having been introduced into Congress?

Mr. KERR. I did not.

The CHAIRMAN. You came here at whose request?

Mr. KERR. To-day, you mean?

The CHAIRMAN. Yes.

Mr. KERR. At your request.

The CHAIRMAN. In response to a telegram, did you not, that I sent you, asking you to come?

Mr. KERR. A telegraphic invitation to come here; yes, sir.

The CHAIRMAN. Do you know anything about manganese ore in the Cuyuna Range?

Mr. KERR. I would not call it manganese ore. I would call it manganiferous ore, if you want to go that far. It is not a manganese ore. The ore is very irregular in both manganese and phosphorus. You could use a small tonnage of it in the manufacture of ferro, and possibly some in spiegel. However, you could use a larger tonnage if it was not irregular in phosphorus and was uniformly lower in phosphorus.

The CHAIRMAN. Have you aided small producers financially and helped them to get started in the production of manganese ore?

Mr. KERR. To no great extent. I want to say that at one of the recent meetings of the subcommittee of the Alloys Committee that question came up and it was decided, if occasion required, that we would go into the matter and report to the committee, and where it was possible, assistance would be rendered.

The CHAIRMAN. Do you think if some financial assistance and aid were given to the small miners it would greatly increase production?

Mr. KERR. I can not say that it would greatly increase it. It might encourage it, but I would not say it would greatly increase it.

The CHAIRMAN. As a matter of fact, if the price is a good price, that would tend in a long way to encourage production?

Mr. KERR. I think so.

The CHAIRMAN. Increase production as well as encourage it, if the price is right?

Mr. KERR. There is no question about that.

The CHAIRMAN. What is the difference between the price now and before the war?

Mr. KERR. Of domestic?

The CHAIRMAN. Yes.

Mr. KERR. As I said before, we were very small consumers of domestic ore. Before the war we got our supply from Brazil, the Black Sea and India. I can not answer that question.

The CHAIRMAN. As a matter of fact, you know that the price has gone up considerably?

Mr. KERR. There is no question about that. It has gone up very considerably. I can not give the exact figures.

Senator SHAFROTH. How much has foreign ore gone up?

Mr. KERR. Five or six times.

The CHAIRMAN. Have you any more questions that you desire to ask, Senator Shafroth?

Senator SHAFROTH. No.

The CHAIRMAN. Is there anything else that you care to state, Mr. Kerr?

Mr. KERR. I would like to repeat, if I may, what I said before, with reference to the necessity of getting ore from Brazil. I think it is a more serious condition than appears on the face of it.

The CHAIRMAN. You can not get your supply from domestic production?

Mr. KERR. As far as we know, we can not.

The CHAIRMAN. You absolutely have to have this ore in order to keep going?

Mr. KERR. Yes, sir; we have got to have manganese to make steel. We all know how necessary it is to get steel production at this time, and we should not take chances of decreasing steel production. As the domestic manganese production increases, if it does increase, the requests for foreign ore will be diminished.

The CHAIRMAN. In other words, you can not impress too strongly on those who have the authority and the power the necessity of getting this ore?

Mr. KERR. That is my point.

Mr. WHITE. Mr. Chairman, I would like to ask some questions, if I may.

The CHAIRMAN. Certainly.

Mr. WHITE. Mr. Kerr, has the steel corporation made any general investigation of the manganese deposits in this country?

Mr. KERR. Yes, sir. You mean with reference to finding prospects or places where there are likely to be deposits?

Mr. WHITE. Deposits which had already been found and which were being worked, or about to be worked. I want to know whether you or your company made any examination.

Mr. KERR. We have.

Mr. WHITE. When did the ferro alloys committee give consideration or really take action in the matter of the use of lower grade alloys and lower grade ores?

Mr. KERR. I would say about four weeks ago. I may add that I have but recently been made a member of the alloys committeee.

Mr. WHITE. Was it not possible before that time to foresee the difficulty in the shipping situation which might arise? Considering that it takes for new mine development at least from three to six or nine months, was it possible, and was the information available so that it was possible, to foresee the crisis in the shipping situation which is now at hand? Was it possoible to take steps which would have encouraged the market for a lower grade of domestic materials somewhat earlier? The reason that I ask the question is that a great many cases have come to our attention of people who were trying to find a market for lower grade ores, which can be done now, but they could not find a market three months ago for ores of that kind. Many of them did not open their mines to the extent which they might have because no effective market was available at that time.

Mr. KERR. I can not answer that question. You say, "might have been done."

Mr. WHITE. Would it have been reasonable business policy to foresee the possible shortage of this kind and take those steps which have been taken earlier? Was that possible from your company's standpoint, or from the other company's standpoint?

Mr. KERR. I will try to answer in this way. We, of the corporation, have changed the basis of ferromanganese down to 60 and 63 per cent. We do not known whether that is going to work. The alloys committee have not asked the other consumers of ferro to do that until we find out the results from the corporation. I think it would be a mistake to go to work and make any radical change at this time, and it would have been a mistake in the past to make any radical change that would decrease production or give an inferior quality of steel.

Mr. WHITE. But now we have to wait for experiments while we need ships to transport troops to Europe.

The CHAIRMAN. Did the Steel Corporation own some of its own ships with which it imported manganese ore?

Mr. KERR. Yes, sir.

The CHAIRMAN. Where are those ships to-day?

Mr. KERR. The Government has them.

The CHAIRMAN. When did the Government take them?

Mr. KERR. I can not say offhand, Mr. Farrel looked after that.

The CHAIRMAN. But within the last year?

Mr. KERR. Yes, sir.

The CHAIRMAN. Up to that time the steel corporation relied upon its own boats for the importation of this ore and was taking care of that matter up to that time?

Mr. KERR. Yes, sir.

The CHAIRMAN. When the Government commandeered all your ships you were left in the air, so to speak?

Mr. KERR. So far as the corporation is concerned; yes, sir.

The CHAIRMAN. That has been within the last twelve months?

Mr. KERR. A shorter period than that.

Mr. WHITE. I understand that the ferro alloys committee is now considering recommendations for certain increases in price of manganese ore, or certain prices related to it.

Mr. KERR. Correct. The subcommittee of the alloys committee have recommended to the alloys committee an increase in the price of manganese ore.

Mr. WHITE. Is that to be a maximum or a minimum price?

Mr. KERR. A flat price.

Mr. WHITE. It is to be a fixed price at which the producer will have to sell. What would make it effective as a price?

Mr. KERR. The prices recommended by the subcommittee of the ferro alloys committee are what they are willing to pay for the ore. If the War Industries Board would approve of it, just the same as they did with reference to the steel industry, it would give a certain stability.

Mr. WHITE. In effect it would create a maximum price which, apparently, would be feasible. You consider a maximum price feasible?

Mr. KERR. It would be a maximum price. You might as well start with a maximum.

Mr. WHITE. It would be a possible maximum fixed price? It would be really a fixed price?

Mr. KERR. It is a fixed price. I think I used the expression "flat price."

Mr. WHITE. If that price should happen to be too low to stimulate a further increase of domestic production, it might discourage production? It would depend entirely upon where the price was put?

Mr. KERR. So far as I know, there is not an operation in this country that is trying to produce ore that is curtailed on account of not getting a sufficiently high price. I want to say further that if any property has ore of a suitable quality, and they are not able to produce it and bring their ore to market, that would be taken up by this committee, and they would consider the proposition and see what could be done to take care of it.

Mr. WHITE. Mr. Kelley stated yesterday they were expecting something like 200,000 tons of manganese ore of 40 per cent grade from Montana. There is apparently quite a promise in southern Nevada and in Arizona. There is a property known as "Owl Head" in California of very large size, but it is distant from transportation, and because of litigation and price conditions has not maintained maximum production.

The CHAIRMAN. What is there under this law, Mr. White, that would permit the President, through the Secretary of the Interior, to clear up the litigation that might exist between the mines in order to get the production?

Mr. WHITE. If that property was idle, in an extreme emergency the Government could take over that property and operate it. There is a section in this bill which was left in by the House committee which deals with that proposition. That is the only case where the Government could do this. Where property is so far from a railroad and where transportation and other conditions can not be straightened out the Government can take it over and operate it.

The CHAIRMAN. Do I understand that that provision of the bill is limited to that extent?

Mr. WHITE. It is primarily to deal with that.

The CHAIRMAN. Primarily, but does not the bill grant wider and other power?

Mr. WHITE. The clause runs "idle or undeveloped, or insufficiently developed," and so on.

The CHAIRMAN. But under the terms of this bill, in your opinion, would the President, through the Secretary of the Interior, be allowed to take over any of these metals as by-products from the smelters that are in this country?

Mr. WHITE. I think I understand your question. It might be a question if arsenic is a by-product of copper to what extent could the President take over a copper company? Arsenic comes from the waste product, from the gases, which the company throws on the dump. Arsenic is recovered from the gases. In the case of an undeveloped deposit, if it is not used, the only way the Government could apply this would be to take the material which is not used, and, if necessary, build a refining plant and use that material, if the company would not do it itself.

The CHAIRMAN. In other words, while the company was operating, the President, through the Secretary of the Interior, could go in and begin operations too?

Mr. WHITE. It could go in with regard to that particular material, as far as arsenic is covered in this bill.

The CHAIRMAN. Could that be done without interference on the part of the Government towards the industry itself?

Mr. WHITE. I think so.

The CHAIRMAN. Would it necessitate any change in the company's plans?

Mr. WHITE. So far as I know, it would not. The bill provides for just compensation for any damage of any kind.

The CHAIRMAN. Could it be done without interference with production and work on the part of the company itself?

Mr. WHITE. I see no reason why it could not. As Mr. Kelly said yesterday, they have to recover arsenic under present conditions. They have to refine it and use it or throw it on the dump piles.

Mr. MUDD. Mr. Chairman, may I ask Mr. Kerr a question or two?

The CHAIRMAN. Yes.

Mr. MUDD. Mr. Kerr, who owns or controls the Brazilian manganese deposits? Are they controlled by capital in this country or generally by local Brazilian parties?

Mr. KERR. Mostly English, I should say.

Mr. MUDD. English?

Mr. KERR. You are speaking about Rio shipments from Brazil?

Mr. MUDD. Brazilian deposits.

Mr. KERR. I would say English, at the present time. There was some Belgian capital in there. Lavino has an interest in Bahia. That is Mr. Lavino, of Philadelphia.

Mr. MUDD. Mr. Lavino is a member of the Ferro Alloys Committee also?

Mr. KERR. He is; yes, sir.

Mr. MUDD. So far as you know, the Steel Corporation or the steel interests in this country are not interested in the Brazilian deposits?

Mr. KERR. The Steel Corporation is not interested in the Brazilian deposits, except from the standpoint of getting the product. It is not interested in the properties.

Mr. MUDD. Have you long-time contracts for Brazilian ore?

Mr. KERR. I think our present contracts call for shipments during the year 1918. We may have some small ones for 1919, but not beyond that.

Mr. MUDD. Not more than six or eight months?

Mr. KERR. No considerable tonnage, but we are not getting the tonnage on those contracts.

Mr. MUDD. Were those contracts made recently or some time ago by the fulfilling of the earlier contracts?

Mr. KERR. We make them from time to time. We would be willing to make a contract to-day if we thought we could get the ore.

Mr. SMITH. I noticed your statement regarding the lowering of the standard of ferro and spiegel from 78 to 70 and from 20 to 16, in the case of spiegel. Of course, the purpose of that change was to utilize the lower grade domestic ores?

Mr. KERR. Yes, sir.

Dr. SMITH. That is a program recently adopted by the Ferro Alloys Committee?

Mr. KERR. Yes, sir.

Dr. SMITH. And the Steel Corporation, in addition to that, is experimenting on even a lower grade of ferro?

Mr. KERR. Yes; 60 to 63.

Dr. SMITH. Now, when did the Steel Corporation begin to buy the ores from the Cuyuna Range?

Mr. KERR. Very recently. I should say within the last six weeks.

Dr. SMITH. Does it not seem possible that some of this shipping shortage might have been foreseen and this improvement in practice begun before 1918?

Mr. KERR. Why, if our foresight was as good as our hindsight, it might have been done.

Dr. SMITH. Take that statement right there. If the foresight of the steel industry, with all its practical experience, had been as good as the foresight of some of the more theoretical members of the community, is it not a fact that this condition might have been foreseen? In other words, is it not a fact that this condition had been foreseen as far back as 1914? I remember an interview I was looking at yesterday, a newspaper interview with Secretary Lane, in which attention was called to the fact that we must depend upon domestic supplies, and it mentioned manganese as one of the commodities where the domestic material must be substituted for the foreign material on the basis of shipping being interfered with. That interview was published in August, 1914.

Mr. KERR. Are you through?

Dr. SMITH. Yes.

Mr. KERR. You know that since 1914 there have been a great many predictions made as to when the war will be over. Those predictions would probably be as good as some of the others. I felt the object of the meeting was to try to find out what we could do from now on. We are not going to gain anything, it seems to me, by discussing what was not done in the past.

Dr. SMITH. Now, along that same line: You would not consider it an interference with the industry if the best practice was enforced upon all?

Mr. KERR. What do you mean by "best practice"?

Dr. SMITH. For instance, the recommendation of the ferro alloys committee is to substitute one and one-half pounds of low-grade chrome ore in place of the five pounds used by some steel makers.

Mr. KERR. You can not make any hard and fast rule, because the conditions are altogether different. A man making alloy steel claims that he requires more chrome ore than the man making the ordinary open-hearth steel. As I thought I said before, we are not going to do anything that will decrease the production of steel or deteriorate its quality. We are not going to do that voluntarily, at least.

Dr. SMITH. If the experiments that are being made by the Steel Corporation in the manufacture and use of 60 to 63 per cent ferro are successful, would it be the policy of the ferro alloys committee to use that as a basis for the new program?

Mr. KERR. It will be.

Dr. SMITH. Then you would agree with me, I think, that that is simply enforcing the best practice upon all.

Mr. KERR. Who is going to be the judge of what is the best practice?

Dr. SMITH. In this case the ferro alloys committee.

Mr. KERR. The ferro alloys committee can not go to the plant of the individual and tell him how he must operate that plant. There are a great many things that enter into that. In the first place, there is the question of the man operating not only the plant, but the furnace. I think we all appreciate that competent men are getting scarcer and scarcer every day, men who can operate steel plants as well as other manufacturing plants. This question came up at a meeting in Pittsburgh, why one man could do it and another man could not, and that brought up the question of, What kind of a man have you operating your open-hearth furnaces?

I want to say that the personal equation cuts quite a figure. The alloys committee will not undertake to tell the individual what to do. It will try to educate him, but he is going to be held responsible for results.

The CHAIRMAN. Dr. Smith, may I ask a question right there, in connection with this bill? One of the objects is to encourage production and also to stimulate production. Is it also believed that under the bill these large companies should be forced to accept a policy to be laid down by the President and the Secretary of the Interior as to the operation and the use that they would have to put these ores to?

Dr. SMITH. Simply in the distribution of the available supply of the raw material. I think that is along the line that the ferro alloys committee is working on at the present time, but apparently with no intention of using much authority. Am I right?

The CHAIRMAN. No force.

Mr. KERR. You asked if you are right, Dr. Smith. I do not think it will be necessary to use force, because we are all a unit and are trying to accomplish the same thing, and we are doing everything we can, from a practical standpoint, to increase the production of the ferrous metals and ores that you are speaking about.

Dr. SMITH. It would not, in your opinion, be feasible for the Government to enforce the practice of the Steel Corporation as an ideal for the smaller producer?

Mr. KERR. I do not think it would be practicable for them to try to enforce it.

The CHAIRMAN. Dr. Smith, do you think that this is a time to try to enforce experiments, unless those experiments have been thoroughly worked out and tested?

Dr. SMITH. I was not basing anything except upon the successful issue of the Steel Corporation's experiments on this lower grade ferro.

Mr. KERR. All the other steel manufacturers would be very glad to put in practice any method that would conserve the metals and ores we are speaking of, keeping in mind the maximum production and the best of quality. As I said before, some of the producers of steel said they could not get along without using chrome ore, but they figured it would decrease production about 5 per cent. They were told to keep the production up and to use the chrome ore.

Dr. SMITH. But with a scarcity in raw material, would it not seem to be public policy, whether that is enforced by a committee of consumers or by the Government itself, to work toward the ideal of the best existing practice?

Mr. KERR. I think the people who are in direct touch with the production are best able to judge how the end can be met.

Dr. SMITH. But is there not a conservatism extent in these various industries, and don't they want to use the rule of last year or the last decade? That applies to some of them, does it not, while others are more progressing and are trying out improved practices?

Mr. KERR. If there are any, they are the exception.

Dr. SMITH. We have had, of course, a somewhat different line of testimony, and some of us have had testimony in the past before there were any committee hearings on this bill, or even before the bill was thought of, that in the making of crucibles some manufacturers could use no American graphite, while others could use 100 per cent. That is a considerable margin in practice. Is it not possible that there is a conservatism that is really reactionary rather than progressive?

Mr. KERR. I would say if there is it is the exception. I think, Doctor, we all appreciate that we are in this with one ultimate point m view. If you had been at the meeting in Pittsburgh on May 7, I do not think you would have gotten the idea that you seem to have because they are all willing to do what can be done, keeping in mind the maximum production and the quality of the product.

Dr. SMITH. Right there, let me tell you that I think that I understand the spirit of the Pittsburgh meeting, but is not the 1918 attitude toward this question quite different from that of 1917 and 1916, not in motive, but in, shall we call it, stage of enlightment?

Mr. KERR. We are doing things to-day that we did not do in 1916 and 1917, and I want to say further that if we find we can do things in the future that we are not doing to-day to conserve the manganese ore, chrome ore, and other ores that are scarce in this country, as well as the metals, we are going to do it.

Dr. SMITH. Do you want me to add that I believe that? (Laughter.)

Mr. KERR. I know that you believe it. I know that you agree with me.

The CHAIRMAN. After all is said and done, we have a situation confronting us here that we must meet in one way or another, and the question is whether we can get the production under this bill, or whether we can get the production without it. The object of the hearing was to bring out, as far as possible, the facts, pro and con, and to get such enlinghtenment on the situation as possible. That is why I have had members of the large trades here to get their views on it, as well as the views of the producers.

Mr. BASTIN. May I ask a question, Mr. Chairman?

The CHAIRMAN. Certainly.

Mr. BASTIN. Might it not be desirable to have one central organization in the Government that would act as a spokesman and that would try to foresee the needs of all these materials that are likely to be rather critical as a result of the war situation, if for no other purpose than to cooperate as closely as possible with those in the industry, we will say, on a voluntary basis, if not on a basis of compulsion. For example, may I ask whether my understanding is correct that an agreement has been reached at a recent conference in Pittsburgh whereby the substitution of spiegeleisen in large measure for ferro manganese is to be brought about? Was that agreement reached entirely through the action of those in the industry, or was some suggestion made on the part of some Governmental agency that some such action was necessary and desirable?

Mr. KERR. As far as I know it was reached through the action of the committee.

Mr. BASTIN. The Ferro Alloys Committee?

Mr. KERR. Yes, that is, as far as I know. We, of the ferro alloys committee, are in close touch with the Government's representatives. Mr. Summers, Dr. Leith, and Mr. Hewett have been in touch with us. Mr. Hewett was at the meeting in Pittsburgh. We try to keep in close touch with each other. Mr. Sanford was also in Pittsburgh.

Mr. HEWETT. May I ask a question?

The CHAIRMAN. Yes. I suppose Mr. Kerr does not object to answering.

Mr. KERR. Not at all.

Mr. HEWETT. I think what we are concerned with is the mechanism by which the users are quickly made aware of not only the sources of supply, but the manner of use. Now, I shall only concern myself with matters of supply. I have an impression myself that there are few people who foresaw that the domestic production of manganese ore would be what it was. I would like to ask if you foresaw or suspected, we will say, a year ago, that the 1917 production was to be about 120,000 tons?

Mr. KERR. I will answer in this way. I do not think ordinarily we would use some of the stuff that we have used in the blast furnaces. As some gentleman here in Washington said, "It is rock at the present time."

Mr. HEWETT. I think the weighted average is possibly 10 per cent under the Brazilian ore.

Mr. KERR. Yes, sir.

Mr. HEWETT. What I was getting at was this. Is it fair to ask what sort of an organization, for instance, the Steel Corporation

maintains for keeping in intimate contact with the new sources of production and prospective sources of production?

Mr. KERR. We have an organization, through one of our subsidiaries, the Oliver Iron Mining Co., and I would say that we average at least two, and most of the time, three men in the field.

Mr. HEWETT. You feel that the contact is extremely intimate and up to date?

Mr. KERR. We think so.

Mr. HEWETT. Bearing upon the question of whether there are domestic resources in manganese ore not now being used, is it fair to ask what sized deposits you would consider as warranting a contract for this material? How about 10,000, 20,000 tons? If you had assurances of 100,000 tons of material of 45 per cent manganese, and 10 per cent silica, would it be equally as attractive as 20,000 tons, and would it warrant your serious consideration in letting a contract for delivery?

Mr. KERR. Let me understand you. You say two deposits, one 20,000 and one 100,000, of the same composition?

Mr. HEWETT. Yes, sir.

Mr. KERR. Do you mean which would be more interesting?

Mr. HEWETT. Would either one interest you?

Mr. KERR. Undoubtedly so.

Mr. HEWETT. Have you any idea how many deposits of manganese ore are now being exploited in the United States?

Mr. KERR. I have a report from your department that Dr. Leith handed to me.

Mr. HEWETT. That is of October 1, 1917?

Mr. KERR. I think we have a more recent report. We got it from Mr. Fowler, secretary of the alloys committee.

Mr. HEWETT. Those are not recent reports. The others have not yet come out.

The CHAIRMAN. Is not that one of the objects and purposes of the Bureau of Mines?

Mr. HEWETT. It is.

The CHAIRMAN. Do you need further power to go on with that same work?

Mr. HEWETT. I think there is a lack of up-to-dateness in being informed. As a matter of fact, we sent out to all known consumers of manganese ore in the middle of November, 1917, the names of those producing each grade of ore. That number has doubled since that time. A new list will be sent out within a month. We know, through the work of our own engineers and geologists, that there are deposits ranging from 10,000 to 50,000 tons in Arizona and southern California that are not now shipping. I have assurances—and I am stating my own personal conviction—that a slight increase in price would bring from 10,000 to 50,000 tons in the market in the next year.

The CHAIRMAN. Is this legislation needed to bring that product into the market for the consumer? If it is there, will not the consumer buy it?

Mr. HEWETT. The base price for manganese ore is commonly at Pittsburgh, and in some cases at Chicago. In one case it is Birmingham. These deposits will not ship if the base price is the present

price at Chicago or Pittsburgh. There should be a mechanism to take care of that. So far no private company has shown its willingness to create a mechanism to bring the material into the market.

Mr. KERR. With reference to the points at which the base price is made, I might say that the recommendation is that Chicago be made the basing point. If this increase that we spoke of of about 18 to 19 cents a unit were put to the trade, don't you think these properties would be able to produce at a profit—the properties you spoke of?

Mr. HEWETT. It will give them a look-in.

Mr. KERR. I think they will stay in. I do not know what properties you mean. Someone has spoken of price zones. It might be all right to divide up the various States of the country into zones, but there is no practical way of doing it. I mean with reference to prices. That is what you are referring to?

Mr. HEWITT. There should be some device by which consumers as well as producers can keep in touch with the situation. Can the ferroalloys committee alone foresee where material may come from at any reasonable price?

Mr. KERR. Yes; I think they can. In the first place, you and Dr. Leith have given us some very valuable information. In the second place, the agents or the buyers of the various people who consume manganese ore come in touch with the prospectors all through the West and Southwest, and in that way we get information from their standpoint.

Mr. WHITE. You say, Mr. Kerr, that you have thought favorably of a zone system. You see how it could be worked out? How do you dispose of the question of paying a higher price at the mine in one district and a lower price at the mine in another. Do you see how that could be worked out?

Mr. KERR. From a practical standpoint, no.

Mr. WHITE. Could not the Government establish a zone price system, whereby it would pay the same for ore in one district where the transportation cost might be higher, and less for ore in another district with cheaper transportation cost, and then pool the total product and sell at a uniform price, thereby bringing out a larger tonnage?

Mr. KERR. I do not think so. I do not think it is practical.

Mr. WHITE. Why not?

Mr. KERR. My idea was, as you say, to make certain zones, but I do not think that is practical.

Mr. WHITE. Well, you establish a straight market price at Chicago for ore of the same quality, irrespective of zones, and irrespective of individual mines. Can you carry it back and can you inaugurate a zone system under existing conditions, without going back to the individual mine?

Here is a group of mines in southeastern Nevada and western Arizona, from which we may get a large tonnage, but which are far from a railroad and whose cost of production is high If the war should close by the time the man gets a transportation system fixed up, and the price of the ore should drop back to four times or three times what it was, instead of being six times, as it is now, and the freight rate from those deposits is higher than the normal price of

ore, would it be good business for a man to go in and put in the money with the uncertainty of the future facing him? The war may be over in six months. The question is not one of zone price. You must come down to the question of treating the individual mine. The present system ignores the individual mine. It is a flat price at a certain point. There is no elasticity relating to the individual mine, unless it is a bargaining feature.

Mr. KERR. That is eliminated. If you could get a zone freight rate, I think that would overcome a great deal of it. With reference to a man taking chances, you say that the war may be over in six months. We will make a contract for the ore on the schedule that we spoke of a minute ago.

Mr. WHITE. That was the question I wanted to ask, as to whether in this proposed schedule of fixed prices for manganese ore to the producer, the time element in contracting was attached. The price means nothing unless it has a time element to it. You say to-day we fix the price. Is your offer to contract at these prices for a period of time?

Mr. KERR. The suggestion or recommendation is for a year, at least.

Mr. WHITE. For a year?

Mr. KERR. Yes, sir.

The CHAIRMAN. If there are no further questions, we will adjourn at this time until 10 o'clock to-morrow morning.

(Thereupon, at 12.10 o'clock p. m., the committee adjourned until to-morrow, Friday, May 17, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

FRIDAY, MAY 17, 1918.

COMMITTEE ON MINES AND MINING,
UNITED STATES SENATE,
*Washington, D. C.*

The committee met at 10 o'clock a. m., Senator Charles B. Henderson (chairman) presiding.

Also present: Dr. Van H. Manning, director of the Bureau of Mines, and George Otis Smith, director of the United States Geological Survey.

## STATEMENT OF MR. H. F. BLACK, ASSISTANT TO THE PRESIDENT OF THE MIDVALE STEEL AND ORDNANCE CO., PITTSBURGH, PA.

The CHAIRMAN. Mr. Black, are you familiar with the bill under consideration by this committee?

Mr. BLACK. Yes, sir; I have read it.

The CHAIRMAN. How long have you been assistant to the president of the Midvale Company?

Mr. BLACK. Since its organization in the latter part of 1915.

The CHAIRMAN. You have heard some of the witnesses testify relative to this bill, have you not?

Mr. BLACK. Yes, sir; I heard one yesterday.

The CHAIRMAN. Have you a statement to make to the committee on this matter?

Mr. BLACK. Yes.

The CHAIRMAN. I wish you would kindly proceed with the matter that you have in mind.

Mr. BLACK. Would you like me to talk about each ore that we use, particularly incorporated in the bill?

The CHAIRMAN. Yes; and then give us your idea of the bill and the results that would be accomplished by its passage.

Mr. BLACK. The three ores in which we are particularly interested are manganese, chrome, and tungsten, and it is my opinion that the manner in which they are now being handled by the alloys committee of the American Iron and Steel Institute precludes any necessity of any Government assistance; in other words, the men on that committee are men very well versed in the sources and requirements of those various ores, and while there is a considerable difficulty just now in securing adequate supplies of proper quality, at the same time I feel that they are doing about as well as a Government agency could do, because they are all so familiar with the business.

In connection with manganese, there is one thing I should like to call your attention to. I overhead Mr. Kerr's testimony here yesterday, and he failed to point out that the Steel Corporation had always prior to the war, when we were going under normal conditions, offered

about 2 cents more per unit of metallic manganese in domestic ore than better grades could be bought for from foreign countries, with the idea of encouraging the production of domestic ores. It is just a point in favor of the United States Steel Corporation that I think Mr. Kerr failed to mention. I think it is fair to the trade that the statement should be made.

At the present time our works are quite well supplied with all these various ores and their alloys. On manganese, we have 1.3 months of ferromanganese in stock at our yards, and enough ore to make 8 months' run. On tungsten, which is all in the form of ferrotungsten, our supply will last somewhat more than a year. On ferrochrome, we now have in stock about 2 months' supply and about 8 months under contract.

We foresaw the possible shortage of foreign manganese ore a year ago and acquired an interest in some manganese ore property up in Montana, but that ore is not of a suitable quality to enable the use of 100 per cent of it in a blast furnace, and it is very necessary that we secure from Brazil or India a better ore to mix with it. The domestic ores are very high in silica and irregular in silica and manganese, and for that reason you need some better foreign ore to stabilize the mixture.

I attended a meeting in New York early this week of the subcommittee of the ferroalloys committee, and it was reported at that meeting that the United States Shipping Board had agreed to delegate enough vessels to transport to America about 35,000 tons of Brazilian ore each month, and it is my feeling that that is a very necessary tonnage of high-grade ore. I would say offhand it represents about 55 per cent of the total American consumption of manganese ore, and if the industry gets that much tonnage per month, I feel we can get along.

Senator JONES of New Mexico. Do you think you would need that Brazilian ore even though you could produce a greater tonnage of the domestic ore?

Mr. BLACK. Senator, I feel that if shipping got so exceedingly acute that it was impossible to import any ore whatever, and a sufficient tonnage of domestic ore could be produced, I think the industry could get along, but at a great hardship. My business is such that I have had quite an intimate contact with domestic manganese ore for 21 years, and my experience has been that the deposits are very pockety and the ores most irregular in quality, and usually very high in silica.

Senator JONES of New Mexico. Then in order to get along with the domestic ores, only it would involve what elements of disadvantage?

Mr. BLACK. The first element of disadvantage in my judgment would be the possibility of getting an adequate tonnage. In other words of the high-grade ore, say containing 48 to 50 per cent metallic manganese, the American industry requires annually under present conditions about 750,000 tons per year. The domestic ore does not average better than about 42 per cent metallic manganese, and roughly, that would mean that 900,000 tons, or perhaps more, would be required of domestic ore. From the best data I can secure the heaviest production of domestic ore in America, up to 1916, or in-

cluding 1916, was 25,000 tons. Last year I understand it reached 120,000 tons.

Senator JONES of New Mexico. What is the freight rate on this ore from Brazil as compared with the freight rate from Montana?

Mr. BLACK. The present rate is $15 or $18 per gross ton from Rio Janeiro to Baltimore and Philadelphia. The freight rate from Montana to our principal works at Johnstown is about $12. Of course the freight per unit of manganese is relatively higher from Montana to Johnstown than it would be from Rio to Baltimore, because the Brazilian ore is 8 per cent higher in manganese.

Senator JONES of New Mexico. What is the chrome situation?

Mr. BLACK. The chrome situation, as far as I believe, is not nearly so critical as manganese, because the basic open-hearth steel industry could, I believe, get along without any chrome ore if it was absolutely impossible to secure it. That is with respect to its uses of refractory. However, there is quite a tonnage of chrome ore required in the production of ferrochrome, which is used for our purposes in the production of armor plate and projectile steel. It is most essential there.

Senator JONES of New Mexico. What grade of the chrome ore do you have to have to make the ferrochrome which you use in the manufacture of armor plate?

Mr. Black. Well, I feel that it ought to contain a minimum of 40 per cent chromic oxide.

Senator JONES of New Mexico. Where is that supply of that grade of chrome ore obtained?

Mr. Black. That grade of chrome is very limited in quantity in this country, the principal sources of supply being South America and New Caledonia. Prior to the war it could be gotten in Turkey and Greece.

Senator JONES of New Mexico. I suppose the principal supply now comes from New Caledonia?

Mr. BLACK. Yes.

Senator JONES of New Mexico. How much of it is brought into the country?

Mr. BLACK. Senator, that is something I can not answer, because we do not manufacture ferrochrome. Our supply of ferrochrome is secured from the Electric Metallurgical Company, Niagara Falls. What little domestic chrome ore we have been able to buy for uses of refractory in open-hearth furnaces has been secured from Canada and California.

Senator JONES of New Mexico. What substitute would you use for the chrome for refractory purposes?

Mr. BLACK. Magnesite if we could get it.

Senator JONES of New Mexico. I believe it has been stated here that the supply of magnesite is unlimited.

Mr. Black. Well, I would hardly make it that strong. There has been some fairly good magnesite shipped in from California.

Senator JONES of New Mexico. Do you have any difficulties with your tungsten?

Mr. BLACK. Not at the present time; no, sir; we have enough tungsten, as I said a while ago, to last us somewhat more than a year.

The CHAIRMAN. Did you get all that from the domestic production or did you have to import some?

Mr. BLACK. We buy that in the form of ferro and get it from E. J. Lavino & Co., Philadelphia, and Shimer & Co., Philadelphia, and the Hudson Reduction Co. It is my opinion that they secure the ores for the production of that largely from the West. Our consumption of that alloy is very small, only five tons a month.

I overheard a question you asked of Mr. Kerr yesterday, namely, was it his opinion that it would be proper to establish a minimum fixed price for domestic manganese ore, and I do not know whether you intended to ask me that same question to-day, but I should like to make a statement.

Senator JONES of New Mexico. Yes.

Mr. BLACK. I feel it would be a mistake to put a minimum price on domestic ore and feel that a flat fixed price, sufficiently high to give the producer a substantial profit, would be much more preferable.

Senator JONES of New Mexico. How could the Government fix that sort of a price? What sort of machinery would it have to have?

Mr. BLACK. I do not believe the Government would have to authorize that price. I believe it could be raised in some such manner as the prices of steel and the prices of pig iron.

Senator JONES of New Mexico. By agreement?

Mr. BLACK. Simply by agreement, and I might say with the approval of the War Industries Board.

Senator JONES of New Mexico. And Mr. Kerr stated yesterday, I believe, that so far as manganese was concerned, they had decided to advance the price 18 cents a unit?

Mr. BLACK. Yes, I attended that meeting myself. I was a member of that subcommittee.

Senator JONES of New Mexico. Will you tell why that conclusion was reached?

Mr. BLACK. Well, it was the feeling that it might be advisable to adopt a price list on ore, a schedule of prices that would be more in harmony with the average price prevailing. Some people were paying a little more than others, and it might have had the effect of leaving the miner in rather an unsettled frame of mind as to just what he could get for his ores, so it was thought wise to issue a very intelligent, or recommend rather, a very intelligent schedule of prices that would enable the producer to ascertain what he could realize on his ore.

Senator JONES of New Mexico. Was the question whether or not that sort of arrangement was in violation of the antitrust law considered?

Mr. BLACK. I do not know as I remember; it was not discussed openly. But we are going through most unusual conditions, and I think we have to meet those conditions with unusual methods.

I wish to say here that the price that that subcommittee recommended to be adopted was fully five times higher than the price of domestic ore before the opening of the war in 1914.

Senator JONES of New Mexico. And you think if an increased price would cause a greater production, the price recommended by you would do it?

Mr. BLACK. Oh, I feel that the price that was prevailing up to the time that recommendation was made was bringing out all the do-

mestic manganese ore that could be mined, because in my judgment there was a very substantial profit.

Senator JONES of New Mexico. That is to those who actually had the ore?

Mr. BLACK. Yes, sir.

Senator JONES of New Mexico. But some prospectors doubtless spent a good deal of money trying to find ore and did not succeed?

Mr. BLACK. Well, that is true of all developments or exploratory work for ores.

Senator JONES of New Mexico. Do you know of any complaint from the producers as to the price?

Mr. BLACK. No, I can not say that I do, Senator.

Senator JONES of New Mexico. People who have the ores are willing to sell at the price that was being paid?

Mr. BLACK. That has been our experience.

Senator JONES of New Mexico. Now, this alloys committee is a subcommittee of the War Industries Board, is it?

Mr. BLACK. That is as I understand it; yes, sir.

Senator JONES of New Mexico. And is performing its functions without cost to the Government.

Mr. BLACK. Yes, sir. They are men who are members of the American Iron and Steel Institute.

The CHAIRMAN. The prices contained in the schedule that Mr. Kerr went over yesterday, however, are not in force and effect yet, are they?

Mr. BLACK. No; they are not.

The CHAIRMAN. They are subject to approval by the War Industries Board, an agency of the Government?

Mr. BLACK. That is correct.

The CHAIRMAN. And if those prices do go into effect it is by and with the consent of the Government?

Mr. BLACK. That is right, sir.

The CHAIRMAN. Mr. Black, is there any other reason why you think it is not necessary for Congress to legislate on this subject at this time other than that the War Industries Board is handling this matter?

Mr. BLACK. No; I can not state any other reasons, other than those that I have given. I think they are quite sufficient.

The CHAIRMAN. Do you think that the fixed price that you speak of would be fair to all producers?

Mr. BLACK. I do, absolutely, for the reason that we to-day are mining manganese ore in Montana, and I——

The CHAIRMAN. How near are your mines to the railroad?

Mr. BLACK. There are several tracts—some of them are as far away as 4 miles.

The CHAIRMAN. Have you any farther away?

Mr. BLACK. No; that is the farthest.

The CHAIRMAN. If I owned your mines in Montana, and you had mines 40 miles away from the railroad, and did not have the capital to put in a railroad to your mines for transportation facilities, who would be getting the better of the fixed price?

Mr. BLACK. The man who was fortunate enough in being better geographically located to the railroad loading point.

The CHAIRMAN. And I would make more profit in my business than you would in yours, by reason of your location?

Mr. BLACK. That is very true. That has always been true.

The CHAIRMAN. Would that tend to stimulate and encourage the production at this time?

Mr. BLACK. Senator, I feel that the price recommended by the committee is sufficiently high to enable a man 40 miles away from a railroad to mine that ore and haul it to the railroad loading point, and still make a fair profit.

The CHAIRMAN. Yes; but the man next to the railroad is probably making a much larger profit, is he not?

Mr. BLACK. That is his advantage.

The CHAIRMAN. We are acting now under war emergencies, are we not?

Mr. BLACK. Yes.

The CHAIRMAN. And this proposed legislation is to meet a condition that came about by reason of the war and is to only exist during the period of the war?

Mr. BLACK. That is true.

The CHAIRMAN. And during a period when we need our shipping for other purposes, and when it may be necessary for us to produce everything we use in the nature of these rare metals here in our own country. Now, for that temporary period of time, would a fixed price tend to bring out the production that is contemplated by this bill?

Mr. BLACK. If that price is sufficiently high, I feel it would, Senator.

Senator JONES of New Mexico. Mr. Black, you say that the present price of this ore is about five or six times what it was before the war. What prices do you have in mind? Just for the purpose of calculation.

Mr. BLACK. Prior to the opening of the war, in 1914, the United States Steel Corporation was the only concern in America that produced ferro manganese in any quantity for its own consumption, and I may say that produced ferro manganese at all. There may have been a few instances where it was produced from time to time by other concerns, but very rarely. All the manganese used by the independent steel companies and foundries prior to 1914 was imported from England and Germany in the form of ferro manganese. Now the Steel Corporation, with whom I was connected for 15 years, it was always their practice to offer more in the market for domestic manganese ore than better ores could be bought for from India, Brazil, and Russia, with the idea of encouraging and stimulating home production. To accomplish that purpose they issued a printed price list, mailed to any man who wrote in that he had a deposit of manganese ore, and that price, to answer your question, paid anywhere from 19 cents to 22 cents per unit of metallic manganese delivered at Pittsburgh, depending upon conditions of the trade.

Senator JONES of New Mexico. I wish you would express that in tons. Of course it will only be an approximate figure, dollars per ton.

Mr. BLACK. Assuming an average of 20 cents per unit of metallic manganese, and taking an ore containing 40 per cent natural manganese, that would be the equivalent of $8 per ton of ore, and the common use is to determine the moisture from the weight of the ore, and

allowing, say, 10 per cent for moisture, that would cost the buyer $7.20 delivered at his furnaces in the Pittsburgh district.

Senator JONES of New Mexico. That is $7.20 per ton?

Mr. BLACK. Yes, sir.

Senator BAIRD. What would the miner get out of it?

Mr. BLACK. Of course, Senator, prior to 1914 it was prohibitive to ship any ore from the West because of the freight rate—the freight rate alone from western points, such as Montana, Arizona, and California, was more than the cost of high-grade foreign ores from India, Russia, and Brazil delivered to Baltimore and Philadelphia. Those domestic ores that were produced and shipped into the Pittsburgh district at that time originated almost entirely in Virginia and North and South Carolina, from which the freight rate made it possible to ship.

Senator JONES of New Mexico. From the $7.20 per ton, the price has reached what figure?

Mr. BLACK. The price recommended in the new scale is roughly $1.20 for the same kind of ore delivered in the Pittsburgh district.

Senator JONES of New Mexico. Per unit; and how much would that figure per ton?

Mr. BLACK. Per ton it would be $43.20.

Senator JONES of New Mexico. Roughly speaking then, there has been an advance of $35 per ton?

Mr. BLACK. $36 per ton.

Senator JONES of New Mexico. And counting a requirement of 750,000 tons per annum, the increased price of that commodity is about $27,000,000 a year for the steel industry?

Mr. BLACK. That is correct.

Senator JONES of New Mexico. Then the people who were able before the war to furnish manganese ore at $7.20 are making an enormous profit now, I assume?

Mr. BLACK. That is a very reasonable statement. Of course, it has to be borne in mind that the cost of mining materials, such as dynamite, explosives of various kinds, supplies, and wages, have radically increased.

Senator JONES of New Mexico. Do all those expenses amount to more than 100 per cent; I mean the average?

Mr. BLACK. I would think that would cover it, Senator, 100 per cent.

Senator JONES of New Mexico. Then a flat price for manganese ore, applied to all producers, would enable some to gain enormous profits and others a very meager profit?

Mr. BLACK. I think the price is sufficiently high, Senator, to enable almost any producer, whether he be away in California, to make a substantial profit, and as an incentive, to get out a maximum production.

Senator JONES of New Mexico. If it be concluded that it is unwise to fix a flat price for all ore, what step could be taken to meet the situation? In other words, what could we substitute for that plan?

Mr. BLACK. I can not see that anything of equal efficiency could be substituted for it.

Senator JONES of New Mexico. Could not the Government take control of the manganese industry and buy all of the ores, allowing

to each producer a fair profit, and then get at the average cost and allocate that to the consumer?

Mr. BLACK. I think it could be done, but I really do not see any necessity for it, Senator, at this time.

Senator JONES of New Mexico. That would be an alternative, would it not?

Mr. BLACK. Yes, sir.

Senator JONES of New Mexico. It could be done in that way?

Mr. BLACK. I think it could be done in that way, but not as effective as the present system.

Senator JONES of New Mexico. Can you suggest any other plan which might be adopted?

Mr. BLACK. No; I can not.

Senator JONES of New Mexico. Then it would seem to be a question of permitting the War Industries Board to suggest to the trade and the producer what is a fair price and have the Government by a law fix a flat price, which it would deem to be a fair price, or enter into the purchasing of all of the ores and allocate them to the trade. There are the three plans, either one of which might operate in a practical way, it seems to me.

Mr. BLACK. I can not see any necessity of making any change in the system that is now accomplishing the desired result. As I said a while ago, the production of manganese ore in America up to the end of 1916 was only 25,000 tons. Last year it had grown to 120,000 tons.

Senator JONES of New Mexico. And now promises to be twice that?

Mr. BLACK. Yes, sir. Now if that is being accomplished under a system, why change the system? I made the statement, shortly after the great war broke out in 1914, that if foreign ore was at some future time shut off from being imported into America, that this country, in case of war, would last just about as long as our available supply of foreign ore in the country lasted, and it was an amazing thing to me to find America able to produce 120,000 tons of ore in 1917. I felt it was impossible. And that has all been brought about by the trade being willing to pay a price that would enable the miner to get his ore out at a profit.

Senator JONES of New Mexico. And you have found means of reducing the requirements for these high-grade ores, which you were using before the war?

Mr. BLACK. I suppose you refer to the reduction in the percentage of metallic manganese in ferro from 80 to 70 per cent?

Senator JONES of New Mexico. Yes.

Mr. BLACK. Yes; we found that possible. It means that we are required to use a little more of the 70 per cent to get the same result as in using an 80 per cent grade. By reducing it to 70 per cent it enables the manufacturer to introduce into his ore mixture a grade somewhat lower in manganese than was heretofore used.

Senator JONES of New Mexico. What is being done in regard to the use of chrome in that respect?

Mr. BLACK. Well, the steel makers have been obliged to make the very best use of the ore they could get regardless of quality. We have used chrome ore in our open-hearth furnaces that we would not have considered using under any circumstances before the war. We

always specified a grade containing a minimum of 45 per cent chromic oxide, and we have been obliged to use material running as low as 22 per cent from Canada.

Senator JONES of New Mexico. With what result?

Mr. BLACK. Rather serious results in the open-hearth furnaces. I might illustrate it this way. That the lower grade ore does not, of course, work as well as a refractory on account of its higher silica content, and therefore necessitates more frequent patching of the walls and the openings, and it follows that if an open-hearth furnace is obliged to cool off from time to time for this more frequent patching, a lesser steel production will be realized.

Senator JONES of New Mexico. The quality of the steel is not impaired?

Mr. BLACK. It does not impair the quality of the steel; it simply decreases production. I may say this, Senator, in regard to chrome ore, that if the Shipping Board could allot several vessels to bring in from South American or New Caledonian chrome ore for the American steel industry, I think it would be a very wise move. Roughly speaking, the average consumption of high-grade chrome ore is about one pound to a ton of steel produced, and at the rate of say 75,000,000 tons of basic open hearth steel per year, which we are now doing in this country, a matter of 30,000 or 35,000 tons of this high grade chrome ore would be a full requirement.

Senator JONES of New Mexico. About the grade of the chrome ore that goes into the steel itself, not used for refractory purposes, how about that?

Mr. BLACK. You mean ferro chrome?

Senator JONES of New Mexico. Yes, ferro chrome. That can not be dispensed with, can it?

Mr. BLACK. Not in the manufacture of armor plate and projectiles.

Senator JONES of New Mexico. You think there is no substitute for that?

Mr. BLACK. Not to the best of my knowledge.

Senator JONES of New Mexico. And you think it is necessary to bring in that high grade chrome ore?

Mr. BLACK. Not absolutely necessary, Senator, for refractory purposes, but I believe it would be beneficial if ships could be conveniently used for that purpose.

Senator JONES of New Mexico. How about the other purposes?

Mr. BLACK. I think it will be necessary to bring in high grade ore for the production of ferro chrome.

Senator JONES of New Mexico. And the domestic product could not take the place of the foreign ore for that particular purpose?

Mr. BLACK. I question it very much.

Senator JONES of New Mexico. The witnesses that have appeared before us, who seem to be purchasers of these ores, some of them at any rate suggested that the thing for us to do was to fix a maximum price.

Mr. BLACK. Does that also include manganese?

Senator JONES of New Mexico. Yes; that is my recollection.

Mr. BLACK. Well, the price we have recommended is virtually a maximum price, is it not?

Senator JONES of New Mexico. It seems to be both.

Mr. BLACK. Yes; it is a fixed price, but it would seem to me that it will get the results that we are after.

Senator JONES of New Mexico. We had some witnesses here who thought that the producers, or perhaps the middlemen, were demanding too great a price and that we ought to fix a maximum?

Mr. BLACK. I would think that this schedule which we have recomended, which by the way will provide that any commission on the ore will have to be paid by the buyer, will eliminate a lot of that difficulty with the broker or dealer. In other words, the producer from now on will know what he will realize on his ore.

Senator JONES of New Mexico. You have heard what Mr. Kerr said yesterday about freight rates, and the fact that the producer had to wait a good while before he knew just what he was getting for his ore?

Mr. BLACK. Yes; that is a very commendable improvement in the system. Under present railroad conditions, it is sometimes as long as two months from the time we ship a car out of Philipsburg, Montana, until it reaches our works, so if we were buying that ore from a commercial producer, it would readily be seen that he would be out of his money an unreasonably long time under that method. The new method provides for a payment of 80 per cent against bill of lading, to which is to be attached certificate of analysis, and the balance, or 20 per cent, on receipt of the car at the works.

Senator JONES of New Mexico. That is done for the purpose of encouraging production, I take it?

Mr. BLACK. It is done largely for the purpose of being fair to the producer.

Mr. MACBETH. Mr. Black, during the hearing before the House Committtee on Mines and Mining, and the debate in the House of Representatives on this bill, its proponents stated that none of the appropriation, which at that time amounted to $50,000,000, was to be used for the purpose of assisting prospectors or claim owners in the development of their claims. Mr. Kerr on yesterday stated that should any manganiferous proposition be presented to his company, or in fact any proposition be presented to his company, it would be referred to the alloys committee, and if upon examination it appeared to have sufficient merit, money would be advanced for its development. What do you say about that, sir?

Mr. BLACK. That is quite true. As I say I was present at the meeting where that was discussed, and we all, the steel industry is willing, I feel quite convinced, to advance money for purposes of that kind.

Mr. MACBETH. It is impossible under this bill, and it will not be done under this bill acording to its proponents in the House and the hearings before the House Mines and Mining Committee.

Mr. BLACK. That is true.

The CHAIRMAN. Do I understand by that if this bill is passed you would refuse to do that anyhow?

Mr. BLACK. No; we would not refuse to do that, Senator, certainly not, because it is to the advantage of the steel industry to get all of this ore of proper quality that we can get.

The CHAIRMAN. No matter who is trying to get it?

Mr. BLACK. And I hope the day will come when it will not be necessary to import any ore from foreign countries. I mean after the

war. We are all hopeful that these conditions, through which we are now going, may be a means of discovering great bodies of unknown manganese ore in this country, and make us independent of foreign connections.

Mr. MACBETH. Would you, having a free rein, go into the manganese business to the extent that you would under present conditions; would you go into the business to the same extent under governmental control of your business, as manganese producers? In other words, would you prefer to have a free rein in the development of manganese properties, or would you prefer to develop those properties under the provisions of this bill with the license feature and other features?

Mr. BLACK. Speaking for our company, we would prefer to handle it independently of any governmental assistance.

Mr. MACBETH. Mr. Black, there is a hoarding feature in this bill, and in discussing this feature one day with one of its proponents I stated that I did not care for the feature, and he stated to me that it was necessary in order to prevent certain large steel companies from obtaining the control of, and hoarding, manganese ore in particular, and preventing other smaller companies that did not enjoy such an advantageous position in the commercial ore manufacturing world from obtaining manganese ore. Is that feature necessary in this bill?

Mr. BLACK. I do not know of any concern up to the present time which has hoarded any of these metals or ores for the manufacture of these metals. Under normal conditions I think it proper that a concern carry at least four months' supply in the yards of any one of these alloys, while under present conditions I do not believe a concern could be accused of hoarding if they had as much as eight or ten months' supply, on account of the difficulty of securing it.

Mr. MACBETH. The reasons given by the proponents of this bill, and which in this instance are the Geological Survey and the Bureau of Mines, are as follows: For Government control to secure just allocation of high grade, imported ores. Your alloys committee is attending to that matter satisfactorily, is it?

Mr. BLACK. Absolutely. I can quote several instances. I know of E. J. Lavino & Co., and E. E. Marshall, both independent producers of ferro manganese, who became seriously short of Brazilian ore to go with their mixtures of low grade ores, and the United States Steel Corporation very considerately diverted cargoes of their own ores to help these people out. They showed a wonderful cooperating spirit.

Mr. MACBETH. The next reason given is to promote development of domestic supplies. I believe you have just touched on that and we will pass it.

Mr. BLACK. Yes, sir.

Mr. MACBETH. The other is to encourage the substituting of spiegeleisen for ferro manganese in steel manufacture. Would you prefer, as a steel manufacturer, to attend to that matter yourself, or would you prefer to have the Government act as fairy godmother and control the spiegeleisen in the manufacture of your steel?

Mr. BLACK. I believe the steel manufacturers of America are fully alive to the critical situation pertaining to manganese, and that they

are substituting to the limit the use of spiegeleisen for ferro manganese, and I question very much whether the Government is sufficiently qualified to regulate matters of that kind. I think it would be advisable to leave the use of one or the other to the individual requirements of the manufacturer.

Dr. MANNING. I should like to make a statement, if I may.

The CHAIRMAN. Certainly.

Dr. MANNING. Mr. Baruch and Mr. Brookings are just as strong proponents of this measure. It is all of record.

The CHAIRMAN. Mr. Baruch made a statement, did he not, before the House committee, when this bill was being considered?

Dr. MANNING. He did, sir; it is in the record.

The CHAIRMAN. In that hearing he stated that in his opinion it was necessary to have some regularly fixed authority to take care of this matter?

Dr. MANNING. He did.

Mr. MACBETH. In reply to that I would say that a long experience with the bureaus and State officers leads me to say that I have never seen the head of any bureau who did not desire to have the scope of his authority extended, and also to——

The CHAIRMAN. Mr. Macbeth, would that make any difference if there were a needed requirement here to do something during the war?

Mr. MACBETH. Mr. Chairman, I will take that matter up later on, when I make a statement. But my questions of Mr. Black were based on a statement made in the Congressional Record of the needs of Government control, and which statement was furnished by the Geological Survey and the Bureau of Mines. I did not go into the question of Mr. Baruch or the Secretary of the Interior, or any other individual. I referred solely to the statements made by the United States Bureau of Mines and the Geological Survey.

The CHAIRMAN. The Bureau of Mines and the Geological Survey have been the existing agencies for a good many years, and have been giving the study of these metals very careful consideration and thought, have they not?

Mr. MACBETH. That is a question upon which grave doubt exists in the minds of western men as to the amount of study given by these bureaus to these matters.

The CHAIRMAN. You heard Mr. Hewett the other day; he gave quite a comprehensive statement on matters under his care and control, and you heard Mr. Kerr state the great amount of information that had been rendered by the Geological Survey and the Bureau of Mines.

Mr. MACBETH. In my opinion, it is a question of locking the stable dor after the horse is gone. Instead of at this time having the absolute data to present to this committee and to the users of manganese, the Geological Survey have not such data. We were advised that a statement would be made up to October 1, 1917. I know, without question, there are manganese deposits in the west that have never been examined by the Geological Survey. I want to say this, however, that this situation has probably developed so rapidly that the survey has not been able to get its men into the field for the purpose of making these examinations, but the fact nevertheless is that the examinations have not been made, and that the survey is not up to date on manganese conditions in our western States.

Dr. SMITH. May I add to that statement that every manganese deposit that is spoken of by a western citizen, or every platinum deposit, or every potash deposit, when examined, does not prove to be as productive as it was earlier set out by the residents of the immediate vicinity.

The CHAIRMAN. So far as this controversy between the Bureau of Mines and the Geological Survey and Mr. Macbeth is concerned, it has nothing whatever to do with this witness and his testimony. Mr. Black is quite anxious to get away on this next train, and I have been trying to hurry this through, and if there are any short questions to be asked of Mr. Black now, please ask them.

Dr. MANNING. I should like to ask him one question. I understood Mr. Kerr to say yesterday that the present price of domestic manganese ores was $1.10 a unit? Is that correct?

Mr. BLACK. Depending upon the grade.

Dr. MANNING. And comparatively in the same grades Brazilian manganese is $1.25 and $1.30 per unit?

Mr. BLACK. No; I would not say that was correct. I would make that statement like this. That a domestic manganese ore, carrying 50 per cent metallic manganese, under the scale of prices recommended by the alloys committee, would figure approximately as high per unit delivered on the Atlantic seaboard as Brazilian ore carrying the same percentage of metallic manganese.

Dr. MANNING. And the price of 19 or 18 cents, which, I believe the alloys committee recommended, would bring the price of domestic ores up to about the price of Brazilian ores?

Mr. BLACK. Yes; in considering the fact that domestitc ore is much higher in silica and very——

Dr. MANNING. I understood you to say that the Steel Corporation offered 2 cents per unit or per ton more?

Mr. BLACK. Two cents per unit, metallic manganese, prior to the opening of the war.

Dr. MANNING. And it failed to produce the ores?

Mr. BLACK. Principally on account of freight conditions being against the producer in the West.

Mr. WHITE. As I understood Mr. Black's statement, if we had to use all domestic ores, that such a thing might be possible, we would have to require say a tonnage as compared to—well, take the ferro ores imported, it is equivalent to about 750,000 tons of ore in the form of either ferro or ore?

Mr. BLACK. Yes.

Mr. WHITE. Then we would have to have at least 900,000 tons of domestic metal to meet that situation from all domestic sources?

Mr. BLACK. Yes; I did not figure that out; I simply estimated that. I had not figured that out.

Mr. WHITE. And that the increased production under existing stimulation had now reached the point of about 120,000 tons last year.

Mr. BLACK. That is true.

Mr. WHITE. With the prospect of possibly doubling this year, and that the conclusion was that the present stimulation was high enough to meet the situation under the existing organization. Now, obviously, the present situation is not meeting the spread fast enough even

to approximate a considerable proportion of the total amount which would be required, and in case the shipping should be interrupted by military necessity, how would the commercial companies and the existing organizations, say the Ferro-Alloys Committee, proceed to raise the domestic production from this estimate for this year of 250,000 tons, to anywhere nearly meet the spread to 900,000 tons?

Mr. BLACK. Well, in the first place it is my opinion that this country will never be able to produce anything like 900,000 tons of manganese ore in any one year, and that the production at the present time would not be materially stimulated even though the price of ore was doubled, my belief being that there is ample incentive to the producer to-day to get out all the ore he can at the profit he is realizing at present.

Mr. WHITE. You do not believe then we can produce an excess of 250,000 tons of 40 per cent?

Senator JONES of New Mexico. Right in that connection I should like to ask Mr. White what he would do now, other than what is being done, in order to increase the supply of manganese ore in the United States.

Mr. WHITE. The answer to that question, Senator Jones, goes into a more detailed discussion of certain phases of this bill, and I was very anxious to see if Mr. Black would have any suggestions as to how the commercial trade first would meet that situation. Mr. Kerr presented the Montana situation and suggested they might get at least 200,000 tons from Montana, and the question I was particularly concerned with was whether Mr. Black considered we could produce in the first place, if the deposits were sufficient to produce it, more, say than 250,000 tons of ore. The first question about which there is doubt was whether we have the ore, and I was wondering whether Mr. Black, in his opinion, thought we had the ore which we could get, provided we were going to go to the limit of development.

Senator JONES of New Mexico. I should like to get your opinion on that. Do you think we have got the ore?

The CHAIRMAN. Would it make any difference, Senator, if we reserve that question until we get down to Mr. White?

Senator JONES of New Mexico. I have no objection to it.

The CHAIRMAN. We would probably take up some time now in answering that question, and I expect we shall call members of the Bureau of Mines and the Geological Survey later on to go into that matter fully.

Mr. WHITE. That requires, Senator, just an answer to the second question. To what extent can the steel industry use spiegeleisen? If Mr. Black would answer those two questions, as to how much domestic ore he thinks we can produce, and to what extent he thinks the steel industry could substitute spiegeleisen, we would have the basis then for the question of how much ore supply either the survey or the bureau has to the thing, and how far we could go in meeting the situation.

Mr. BLACK. In the first place, the use of spiegel as a substitute for ferro is limited in quantity according to the character of the steel produced. The country to-day is undoubtedly using materially more spiegel annually than in any year heretofore, and the limiting factor in the use of spiegel is its high carbon, and in some cases high phos-

phorus, so far as using it in the production of certain classes of steel is concerned.

Mr. WHITE. Are we using spiegel in all steels for which we could use spiegel at the present time to your knowledge?

Mr. BLACK. We are in our own works, Mr. White. I can not answer for other works.

Mr. WHITE. I understood Mr. Kerr to say yesterday that they were using high grade Brazilian manganese ore to manufacture spiegel. Now in case of a shortage of high grade ore, I had understood low grade ores would make satisfactory spiegel, and that might be a conservation measure.

Mr. BLACK. Here is something to be borne in mind, in reference to that statement, that in the production of spiegel it only requires a quarter of a ton of Brazilian ore of good quality with three-quarters of a ton of the average iron ore, that will produce a spiegel containing 20 per cent manganese, and in terms of tonnage, it is not as serious as might be at first surmised. There is considerable tonnage of ore in the Cayuana Range, which is sufficiently high in manganese to produce spiegel were it not for the high phosphorus in those ores.

Mr. WHITE. There are considerable low phosphorus ores, are there not, too?

Mr. BLACK. Not considerable; there may be some.

Mr. WHITE. I understood the production of spiegel from the New Jersey zinc leases might possibly be doubled in case of necessity, and the Cayuana Range might easily be doubled from the low grade ores in Leadville, Colo., and Silver City, Nebr., and a 35 per cent spiegel be procured from those sources of low grade ores.

Mr. BLACK. I think that is possible.

Mr. WHITE. In other words, we could double very easily our product of spiegel in this country if we can find a use for it.

Mr. BLACK. Understand spiegel can only be used in large quantities where a low carbon steel is being produced. It can not be used in the manufacture if you have steel in the open hearth.

Dr. SMITH. Mr. Black, you spoke of the increase in the price of manganese ores since 1914. What is the corresponding increase in the price of ferro?

Mr. BLACK. 1914 would hardly be a fair year to use as a criterion.

Dr. SMITH. Any year before the war.

Mr. BLACK. I should state the average price of 80 per cent English standard ferro manganese for a five-year period was $45 per gross ton delivered at Baltimore and Philadelphia.

Dr. SMITH. And the price now is what?

Mr. BLACK. The price to-day, if we were getting any from England, would be $250, but the importation has been shut off.

Dr. SMITH. That would be an increase of $200?

Mr. BLACK. Practically so.

Dr. SMITH. And the increase in the cost of the ore would be about $100, the amount of ore to——

Mr. BLACK. Five to six times the prewar average.

Dr. SMITH. That would mean about $100 increased price for the ore that would go to make up a ton of ferro, taking your proposed prices?

Mr. BLACK. That is approximately correct.

Dr. SMITH. In other words, these increased prices that are being offered for manganese ore would not raise any further the current prices for ferro?

Mr. BLACK. I can see no necessity for it, Mr. Smith.

Dr. SMITH. The margin is sufficiently ample?

Mr. BLACK. I would think so.

Dr. SMITH. So that there would be no increased cost in steel involved by that proposed increased cost in——

Mr. BLACK. I could see no necessity. Because after all we only require about 1 per cent of the weight of a ton of steel in the manganese.

## STATEMENT OF MR. J. M. FLANNERY.

The CHAIRMAN. What business are you engaged in, Mr. Flannery?

Mr. FLANNERY. I am engaged in the production of radium, uranium, and vanadium.

The CHAIRMAN. How long have you been engaged in the business?

Mr. FLANNERY. About seven years.

The CHAIRMAN. Where is your business located?

Mr. FLANNERY. Our mines are located in Colorado and our factory is located at Canonsburg, Pa., and our refining is in Pittsburgh. We mine in Colorado and bring the ore to Canonsburg, and treat it chemically there extracting the values, then take it into Pittsburgh to refine the radium.

The CHAIRMAN. Do you know of any other people engaged in this same business?

Mr. FLANNERY. Yes, sir; about five or six others in this country.

The CHAIRMAN. You have read the bill that is now under consideration by the Senate committee, have you not?

Mr. FLANNERY. Yes, sir; I have.

The CHAIRMAN. It deals with these three metals that you have just referred to?

Mr. FLANNERY. Yes, sir.

The CHAIRMAN. What are the conditions to-day relative to the production of these metals and the supplies on hand to meet the needs and requirements of the trade?

Mr. FLANNERY. Well, there is an adequate supply of raw material. The production of radium possibly could be 50 per cent greater than it is to-day if we had the market. We have not the market. We are not in that happy position a lot of other men are during the war. However, we supply the allied governments with this radium for luminous dials on compasses and watches, and articles of that kind, you understand. The vanadium is used in several kinds of steel, and the uranium we are now trying to introduce as an alloy for steel; we are selling 100 per cent of our vanadium because we do not produce much. We are selling and delivering probably 50 per cent of our radium—that is, 50 per cent of the capacity of our mill, and we are selling 10 to 15 per cent of our uranium.

The CHAIRMAN. Then there is not a greater demand for those metals than you are able to supply?

Mr. FLANNERY. No, sir; only in the vanadium. Of course I am limited there to the amount of vanadium in the ore. We get it as a

by-product. The Government gets it all, either directly or indirectly.

The CHAIRMAN. From your examination of this bill, do you think this bill would tend to encourage the production of these metals?

Mr. FLANNERY. I do not think so, Mr. Chairman.

The CHAIRMAN. Why not?

Mr. FLANNERY. Well, first of all there is an adequate supply of the ore; where we have been short in producing this material is due to transportation of chemicals and labor. I do not think there is any reason why our business should be increased by this bill, because it was tried before and fell down. Some three years ago the Bureau of Mines endeavored to have a bill passed encouraging the production of this material, and while there were some men that went out and took up claims with the hope of finding a market, they were not guaranteed sales for their ore, and therefore had to give up those claims, after spending the money and days of time working their claims, because the business had not increased, due, in my opinion, a great deal to the fight of the Bureau of Mines. Now, I do not want to go any further into that question unless you do.

The CHAIRMAN. What bill was that you are referring to?

Mr. FLANNERY. It was a bill, I think, presented in Congress by Dr. Foster, chairman of the Mines and Mining Committee.

The CHAIRMAN. Of the House?

Mr. FLANNERY. Yes, sir; but apparently it was not necessary and it died.

The CHAIRMAN. Has the production since the introduction of that bill continued and has it been stimulated at all through natural conditions?

Mr. FLANNERY. No; the physicians who bought our radium before, on account of so many of them leaving for the war, our business in that line has fallen off, while on the other hand, the demand for compasses, for marching purposes, also for aeroplanes, and submarines, and ships, has stimulated the trade somewhat, but only to the extent of 50 per cent of our full capacity.

The CHAIRMAN. Then you have a surplus on hand of that ore?

Mr. FLANNERY. Oh, yes. I will show you that, if you wish.

The CHAIRMAN. Very well.

Mr. FLANNERY [referring to plat]. These are drillings made on the property to ascertain the amount of ore and the quality we had there. You will notice here the little different colored spots which represent the class of ore according to its quantity or values. The green I think is 1 per cent ore and the red 1½ and the yellow 2 per cent ore, or higher grade ore. That is only a sample of the claims we have. These are drillings made to ascertain where this ore is. These are all developed ready to take out at any time we are ready. It amounts to about, I should say, 6,000 tons of that ore.

The CHAIRMAN. The plat or diagram that we have before us repsents such mines?

Mr. FLANNERY. The claims there; you see the names on them, Mr. Chairman.

The Chairman. Where are those claims located?

Mr. FLANNERY. In Colorado. These claims are now being worked. Here is another map showing the ore drilled. At this point here

there was a tree 180 feet long and 5 feet in diameter. It was petrified, and we took out of it about seven or eight hundred tons of this ore. You see we drilled all around it, have been drilling in this territory about three and a half years, so if they ever want it the material is there.

The CHAIRMAN. And you have discovered and located this metal in these claims?

Mr. FLANNERY. Yes, sir. I brought these plats along merely to show you we had an adequate supply of this ore if you want it. It seems there is a question about this material, as to its being there in sufficient quantities, and I want to state now I do not know of any work the Geological Survey has ever done on this property here, and that the knowledge we have is the only correct and only direct knowledge of the bodies that do exist. We did this for this purpose, gentlemen, not only to have an adequate supply but to ascertain what our average ore would be, so we could build a concentrator to handle it. It is not a high grade ore, but mostly a low-grade proposition, so we erected a concentrator to handle ore that will average 1 per cent; that is, running from 0.50 to 1½ per cent, and having an average of 1 per cent. We can handle those ores now which are in abundance there. We could not live on the higher grade ores; we could not produce the material or quantity wanted, from the small amount of high-grade ore available in the field.

The CHAIRMAN. So far as these ores are concerned that you have referred to, you know of no reason for any legislation to encourage the production?

Mr. FLANNERY. I do not think legislation would encourage the production. They tried it once before and it failed.

The CHAIRMAN. You are prepared to produce these metals in such quantities as might be needed to the Government at any time?

Mr. FLANNERY. Yes, sir, and the allies. We are supplying them both now. My case is just a little different from the men who produce metals. We never see a radium metal, it is only a salt. What we require is chemicals. Now, if we are going to write radium into this bill we must have also some protection against the higher price and cost of chemicals. Our chemicals have risen 300 per cent, and pretty nearly put us out of business. Another thing I would like, if it is necessary to include radium in this bill; I am satisfied it should go along if it is for the good of the Government. If it is necessary to put radium in this bill, why not mesothorium and the other radio active substances. Mesothorium is a by-product of an ore that the bulk of it must come from Brazil.

The CHAIRMAN. Is that an alloy?

Mr. FLANNERY. It is a by-product of the metal thorium and is gotten out as mesothorium.

The CHAIRMAN. Thorium is mentioned in the bill?

Mr. FLANNERY. But mesothorium is not.

The CHAIRMAN. Just explain what that is,

Mr. FLANNERY. It is a by-product of thorium. For instance, you extract the thorium from your ore then you have a residium left which contains mesothorium.

Mr. MOORE. Thorium is in the bill. You can not produce commercial mesothorium without producing thorium, therefore meso-

thorium would come under the bill. I may say also that mesothorium has not been produced up to the present time but is going to be produced.

Mr. FLANNERY. That is all right; it will be produced very shortly, and it is going to be quite a competitor. All I want is a square deal; put them both in there. I think the best thing you can do is to throw us both out. However, Mr. Chairman, I did not go over the bill very carefully because I was not very much interested in the other part of it. This is the only part I was interested in:

To provide further for the national security and defense by encouraging the production, conserving the supply, and controlling the distribution of those ores, metals, and minerals which have formerly been largely imported.

Our ores never have been imported. There is an adequate supply. The ore is not imported, and there is an adequate supply. I do not know why it was put in there. I think somebody shut their eyes, loaded their gun, and shot at this bill, because I know the very gentleman who put that in the bill knows about other metals which are more important than radium, and which have not been mentioned.

The CHAIRMAN. What are those metals?

Mr. FLANNERY. Nickel and aluminum. Nickel is a very important alloy; aluminum is very necessary in the steel business, and we have experienced aluminum rising from 20 cents to 90 cents in this big drive here in the steel for the Allied Governments early in the game. It says here "only." I think the word "only" ought to be taken out of that bill, because there are other things you may want to put in that bill.

The CHAIRMAN. Are there any other matters you think of at this time that are not included in the bill, and that would come under this heading that you have read?

Mr. FLANNERY. No, sir; I do not think of any, Mr. Chairman. As I told you, nickel and aluminum and mesothorium and the other radio active products. I do not think they are produced commercially now, and probably never will be, but it is advisable always to take care of those things.

The CHAIRMAN. Have you any questions, Dr. Manning?

Mr. MOORE. Mr. Flannery, you stated that you had there probably about 6,000 tons of ore you could count on?

Mr. FLANNERY. Yes, sir.

Mr. MOORE. May I ask about what your production of radium last year was?

Mr. FLANNERY. Our production of radium last year due to lack of transportation and chemicals was about 7 grams of radium.

Mr. MOORE. How much ore did you use in that production?

Mr. FLANNERY. We used originally about 600 tons of the average ore to the gram of radium—that is, to 1-30 part of an ounce.

Mr. MOORE. In other words, you have used about 14,500 tons of ore to get 7½ grams?

Mr. FLANNERY. I have not figured it out.

Mr. MOORE. Therefore your 6,000 tons would make less than 10 grams; you say you have 6,000 tons roughly blocked out there?

Mr. FLANNERY. You understand I am speaking now of the ore at the concentrator. Yes, sir; it takes about 600 tons, raw ore concentrated, or about 4 to 1 to give you a gram of radium with our practice.

Mr. MOORE. According to your own statement your total supply of ore would be not more than 10 grams.

Mr. FLANNERY. The total supply of ore. You mean the total amount to be mined?

Mr. MOORE. I mean you have blocked out that; you stated you had about 6,000 tons of ore you could count on. Assuming that to be correct, then you could get only from that less than 10 grams?

Mr. FLANNERY. No; you must figure something on some of that being of a little higher grade. That 6,000 tons of ore will probably run 1½ per cent.

Mr. MOORE. I am taking your average production of ore last year as being the average of what you could get out of this, which would mean that there are less than 10 grams that you could count on, assuming that to be correct?

Mr. FLANNERY. Yes.

The CHAIRMAN. How much radium is used a year in this country?

Mr. FLANNERY. Our contracts on the books—this is the best year we have had since the war began—our contracts on the books will amount to—the sales and deliveries we have made this year, will amount to probably 12 grams of radium. You see it takes four months practically from the time we mine our ore until we have the radium ready to go to the Bureau of Standards in Washington.

Mr. MOORE. The total production is somewhere around 12 grams, and we will probably need more this coming year.

The CHAIRMAN. How much ore have you got blocked out as shown by these maps?

Mr. FLANNERY. I do not know. I showed you on that map 6,000 tons at least. You see our properties extend north and south, as a bird would fly, 20 or 22 miles, and an average width of probably 4 miles.

Senator POINDEXTER. Where is that?

Mr. FLANNERY. In southwestern Colorado. As regards the production of ore, Mr. Moore and I had a little talk last Saturday, and he claimed he thought there were only 100 grams of radium in the Paradox Valley. I will take a contract for delivering 500 and put up a bond for the amount each year.

The CHAIRMAN. That refers to some undeveloped fields?

Mr. FLANNERY. Some undeveloped, but some of them are pretty well developed.

The CHAIRMAN. How many thousand tons of ore have you blocked out and shown on these maps?

Mr. FLANNERY. Six thousand, about, on that, but that is only about three claims.

The CHAIRMAN. And you have how many claims?

Mr. FLANNERY. We have 347.

The CHAIRMAN. Have you done any development work on the others?

Mr. FLANNERY. Yes, we have been mining from them. We have been paying the Government out there about $25,000 or $35,000 a year tax, you know. In other words, Mr. Chairman, we went into this game to win and did not develop as fast as we thought owing to this fact that before the war most of the radium was going to Germany; they were sending it around to the different municipalities to

treat cancer with. All at once our business was shut off and we were broke, practically, that is down and out, and we tried to revive the thing again, and the Bureau of Mines thought they could do it better than we could, and they came out proposing to make radium at about one-third the price we could, and of course the doctors said, "We don't want your stuff; these folks will make it cheaper than you."

Then we just went in one door and out the other. That has been the way, and I have told you that we have been up against it good and strong two or three times. If I had been boarding with anybody, I believe I would have skipped out, but I had my home and that saved me. Those are the facts that I am telling you; it is true. The Standard Chemical Co. is asking for no favors; all we want is to be treated fair. We have the metal. These gentlemen of the National Radium Institute have done some work on this uranium out there. In these carnotite fields I do not think they did a whole lot of good. The work we did did not mean persons walking over the grass for 2 or 3 or 4 miles or riding on horseback, or riding in a buggy—I mean examining the country as a mining engineer examines property. We had to do that ourselves.

The CHAIRMAN. How much radium is being produced in the United States altogether?

Mr. FLANNERY. At the present moment, you mean?

The CHAIRMAN. Yes.

Mr. FLANNERY. Well, in 1918 we will produce probably 15 grams, and the other people will produce probably about 8, 9, or 10. I can not tell. I do not know much about their production.

The CHAIRMAN. In the neighborhood of about 25 grams. How much is used per year?

Mr. FLANNERY. Just that much.

The CHAIRMAN. Is there a use for more than you all can supply?

Mr. FLANNERY. I do not know yet. No: the medical end of it has fallen down, and the luminous end of it has come up, so it just about equalizes itself. There is probably a little more in the luminous than in the medical end; the doctors have all gone away, and they will not invest in radium because it is too expensive to leave it lay around here when they are over on the front working.

The CHAIRMAN. That is due to the fact that the doctors have been going to the Medical Corps?

Mr. FLANNERY. Yes; but I would be willing to guarantee to produce 25 to 30 grams of radium a year if I had the factory for it. We have got the raw materials for it; it only needs the additional works capacity. That is about all.

Mr. Moore asked me how much radium we produced last year. We produced about 7 or 7½ grams, but we could have produced 15 if it was not for transportation. They had our ore locked up on the road, you know, for six months. If we saw a car we would take our hats off to them, they were so scarce. Then we had to maintain our technical organization. It takes some money. You can not let an organization like that go when they loaf a month, so it costs a lot of money to keep.

The CHAIRMAN. What is radium worth?

Mr. FLANNERY. $100,000 a gram. We have got to mine 600 tons and concentrate it and ship it to southwestern Pennsylvania, and take

it into Canonsburg, and work it for a month or so, and then take it up to Pittsburgh and work on it for a month or so. There is very little profit at the present time I assure you of that. But if it were not for the alloys in our ore we could not go on, regardless of what anybody says. I think we know. We have a big organization; we know what it costs us to produce, and know what we have. We have to know that; we have a million and a half dollars of money invested in it. That money has been put back in the business; whenever we made a cent we put it back. We have got a big investment there.

The CHAIRMAN. Do you think this bill would hamper you at all in your operations?

Mr. FLANNERY. No; I do not. I would rather the United States Government would take it than anybody else because they are good, you know. If they want it, they can have it. They can have it sure, right off the bat, and they can make as big a contract as they want to. I do not think it would hamper me. I think if it were necessary for the Government to have at this particular time this plant, I think they have a right to have it, and they can get it if they want it. We will turn over everything we have.

Dr. MANNING. I should like to emphasize what Mr. White said. There is one feature of this bill I am concerned in, not so much with increasing production, but controlling it for nonessential purposes. The allies must have radium and the United States must have radium for the aeroplane work, for their gun sights, and there is no use of putting radium on all these Ingersoll watches if we have to have it, and there is a shortage of supply. There is no agency that can limit the nonessential uses.

The CHAIRMAN. At the present time there is no agency that can control that?

Dr. MANNING. The Government could commandeer it, but I do not understand the Government has commandeered it directly, except through the contractors making these luminous dials. We have suggested to the War and Navy departments to encourage the use of radium in that way.

Mr. FLANNERY. For what purpose, Dr. Manning?

Dr. MANNING. For aeroplane uses.

Mr. FLANNERY. You have encouraged its use, you say?

Dr. MANNING. Yes.

Mr. FLANNERY. You see pretty nearly every soldier in the trenches has a wrist watch and it has a luminous dial. Suppose he is walking his beat, or has to get up at a certain time in the morning, it is very handy; they seem to think they are an absolute necessity. That is what they have been putting radium on. I took it up with Gen. Crozier when he first went into the field, and he said he would have given a great deal if he had had that thing in China.

Senator POINDEXTER. What do you have to pay for a watch like that, $200 or $300?

Mr. FLANNERY. If you put it on an Ingersoll that ought to answer your question, sir. No, they cost, I think the Ingersoll watch is selling for $3, Senator. They are very convenient for some people, you know. There is an absolutely adequate supply of carnotite ore. I think I saw an article in a paper emanating from the Bureau of Mines, I think by Mr. Lane, in which he said it was not right to use

radium on luminous watches; that it was needed for treatment of cancer. Is that right, Dr. Manning?

Dr. MANNING. To a certain extent I agree with you. We should furnish the Army officers and privates; it is essential; but I do not think it ought to be used for automobiles or clocks or watches.

Mr. FLANNERY. It makes a clock a 24-hour timepiece; you can see it in a dark room. Lots of fellows get home pretty late at night, you know. You know there are many necessities outside of the dire necessities. I do not think radium should be used in any way foolishly, because it is too valuable a material. But I do think we have got to have some market to maintain the mining end of it until we get the real use of it. We are doing work like this: We have clinics in Denver and we are having some very interesting results with radium and vanadium. We have had these clinics now for about eight months and they are proving very interesting and important, and I think radium will be used later on. We have also had our clinics on the effect of radium on the blood, enemic people, and other conditions of the blood. We did work on people with rheumatic tendencies, and all these clinics have been gotten up by us, maintained and paid for; nobody else did it in this country. And we think we are going to find some time that radium is going to be of the utmost value to humanity. To-day we must sell it to get money enough to keep us going, and if we are not allowed to put in on watches or in the dials of the compasses, which are convenient to the people who use them, if we are not allowed to do that, we could not live, because our radium business to-day with the physicians is about 3 grams a year. That is $300,000. When you take into consideration that our expenditures are $100,000 a month, you can figure that out. That is our position. And if we spend our money doing this, which should have been done by somebody else. Making these plats and developing the properties to produce the material is costly work.

The CHAIRMAN. Then, as I understand you, Mr. Flannery, you do not see where you get any benefit under this bill?

Mr. FLANNERY. None at all, Mr. Chairman. It does not do me any good.

The CHAIRMAN. Nor any harm either?

Mr. FLANNERY. As I say if we are to be put in that bill, then I think the other radio active products should be put in that bill. However, I do not think it belongs in there.

The CHAIRMAN. If it should be found that it was necessary to pass such legislation for some of these metals, do you not think it would be well to have all the metals in, so that in case an emergency arose this agency would be empowered to handle that emergency?

Mr. FLANNERY. It depends on the people who are producing those metals. If it is a big company, and they have a lot of money, and can stand by and put up the money to produce these materials and put them away and carry them, yes, but not in our case.

The CHAIRMAN. Where does it hurt you? What if you were producing a sufficient quantity of radium for the needs and requirements of this Government and our allies——

Mr. FLANNERY. Yes.

The CHAIRMAN. This agency would not interfere at all with it?

Mr. FLANNERY. Not at all.

The CHAIRMAN. You would not be hurt at all?

Mr. FLANNERY. Only to this extent, if we were in any way handicaped by not being permitted to ship our materials we produced out. Now, going into the license end of it, if we had to store any considerable amount of our material, you can imagine what it means, when you have expenses of $100,000 monthly to take care of.

The CHAIRMAN. I see where it might tie up a large amount of money.

Mr. FLANNERY. If the Government wants to put radium in that bill and be honest with the producers, why not give them a contract? The steel people got theirs, they gave them a contract for their materials. It is only fair if the Government wants to use radium, to say, "We want to control your output, we want so much of your material, we will contract to take it from you."

The CHAIRMAN. The bill passed in the House only provides for $10,000,000.

Mr. FLANNERY. That would not even carry the manganese end very far, therefore we are in pretty bad shape there. I say if the bill did go through it might do us harm if that turned out that way.

The CHAIRMAN. If the bill did go through then in your opinion there should be a larger amount provided under the bill than $10,000,000?

Mr. FLANNERY. I think any man that ties me up for first preference on the material I produce ought to give me a contract, and that man should be worth that contract, because when we first started to produce material for the allied governments, and they wanted them in a hurry, the different people who manufactured were paid a certain percentage of advance money on the business—33 per cent. That enabled them to go ahead and produce their materials. If you only tie us up like a horse and leave us there, we are done, because we can not produce the material and put it way; it is worth too much money.

The CHAIRMAN. This bill also provides that the governmental agency could enter into a contract and guarantee you a price, for not to exceed two years.

Mr. FLANNERY. Yes, we will go into a contract on that, if the price is right.

Another thing, in our case, as I told you a few moments ago, we are not just so situated as the other men producing these other materials mentioned in this bill. In handling our material we must use an awful lot of chemicals, and if the price of those chemicals is not controlled we are gone, and when we get a Government contract for two years at a price, and the chemical man knows it he generally wants increased prices. They are not a bit bashful about it. In other words, as I say, our chemicals have increased 300 per cent in the last year. We could not get them in the quantities needed. We go to the producer of the material, and he would say, "Well, by jove, I am sorry, but we are out; you go and see John Smith." His price would be 2½ cents if he had it. You go to see John Smith, and he will say 3 cents spot. That one-half cent on a pound for the material, where you are using a ton means a whole lot of money, and that is what occurred for a year or a year and a half. That is our condition to-day. We can not do anything. If the Government contracts

to take our radium they ought to also assist us in obtaining these chemicals—soda ash, the different acids, the different chemicals that we use; we should be protected in the price of them, otherwise it would be foolish for us to make a contract with the Government to produce radium for their use. We have to buy this stuff spot.

The CHAIRMAN. If you entered into a contract with the Government, say for a year, you would have to depend on these chemical companies to furnish you with the chemicals you require in your business?

Mr. FLANNERY. Absolutely; yes, sir. If they did not have the chemicals I could not produce the material. My contracts, of course, would be subject to all conditions over which I have no control, supplies of chemicals and things of that kind.

Senator POINDEXTER. Does the Government produce any radium now? It seems to me I have a recollection in some former hearing on the bill, on which you were a witness, that there was some testimony about some experimental works that the Government has near Denver. Have they carried on those works?

Mr. FLANNERY. I do not know, Senator Poindexter. I think Mr. Moore can tell you. He is at the head of it.

Mr. MOORE. The work was carried on, Senator, for about three years under a cooperative contract with the National Radium Institute. The period finally elapsed and the work was completed and has ceased.

Senator POINDEXTER. Was any radium produced under that contract?

Mr. MOORE. Yes, sir; between 8⅓ and 9 grams of radium—over 8½ grams.

Senator POINDEXTER. What was the source of supply of the ore?

Mr. MOORE. The same district as Mr. Flannery gets his ore from.

Mr. FLANNERY. Mr. Moore asked me a question about the ore we had developed by the drills on this property, and I told him I thought about 6,000 tons. That means on these claims here in the drilling we have done so far, but there are other claims we are now drilling. Some we have not got the information from yet.

The CHAIRMAN. I so understood you.

Mr. FLANNERY. I wanted you to understand. Mr. Moore was probably under the impression we could only produce 10 grams of radium. Well, we can produce 30 grams a year for a number of years.

Mr. MOORE. I meant that question from your developed ores.

Mr. FLANNERY. That I personally know about?

Mr. MOORE. Yes.

Mr. FLANNERY. That is all I can tell you about. Of course there is a great deal more developed ore that I can not give you information about until I receive it.

Senator POINDEXTER. Is there any other radium deposit in this country besides this you speak of?

Mr. FLANNERY. Oh, yes; plenty of it—in Utah and in Colorado, and there is some in Washington.

Senator POINDEXTER. Where in Washington?

Mr. FLANNERY. I do not know. I know it is there, but I do not know where. Probably the Geological Survey can tell you.

Senator POINDEXTER. How much radium do you think it is practicable to produce in this country if all these sources of supply were developed?

Mr. FLANNERY. You mean at the determination of the material in the ground?

Senator POINDEXTER. No; I mean per annum?

Mr. FLANNERY. I think, to be very conservative, say 30 grams a year.

Senator POINDEXTER. Altogether?

Mr. FLANNERY. Yes. I can do that. We will say, to be conservative, 30 grams.

Senator POINDEXTER. There was produced, as I understand from your statement to Dr. Moore, about 12 grams last year?

Mr. FLANNERY. Yes, but that was due, Senator Poindexter, to our ore not reaching us. It was on the road six months and we were shut down.

Senator POINDEXTER. Did you have any trouble, or were you required to get priority orders from the Government for shipment, or anything of that kind?

Mr. FLANNERY. Yes, sir.

The CHAIRMAN. Did you have any trouble about it?

Mr. FLANNERY. Well, at that time the priority order did not have much effect because of the snow. The snow beat everything then.

Senator POINDEXTER. One trouble was that nearly all the freight in the country had priority orders?

Mr. FLANNERY. Everybody had one. It was a question who beat the other to it.

Senator POINDEXTER. At one time 80 per cent of them had priority orders?

Mr. FLANNERY. Yes.

Senator POINDEXTER. So far as the shutting off of the use of radium from nonessential industries is concerned, the Government has ample authority now to do that, has it not, under its priority powers and others?

Mr. FLANNERY. You mean in keeping the supply of chemicals; yes, sir.

Senator POINDEXTER. There is nothing in this bill guaranteeing any price that you would get for your radium from the Government, if the Government took it over?

Mr. FLANNERY. No, sir.

Senator POINDEXTER. All of that is a matter of negotiation; you do not know what price you would get?

Mr. FLANNERY. No, sir; I do not.

Senator POINDEXTER. You are willing to take your chances?

Mr. FLANNERY. We are willing to take our chances, provided, of course, now if the Government wants this radium, I will give it to them at a price if they will guarantee to keep me supplied with chemicals.

Senator POINDEXTER. There is nothing in the bill which requires them to keep you supplied with chemicals, is there?

Mr. FLANNERY. No, sir; there is not.

Senator POINDEXTER. You think, then, it would encourage the production of radium to pass the bill as it now is?

Mr. FLANNERY. I do not think so, Senator, because going into the radium business is one of the biggest chances I ever knew of and certainly it takes a lot of money to go into it. Then there is not a marget everywhere.

Senator POINDEXTER. What is the entire world production of radium; what was it last year?

Mr. FLANNERY. Last year? I do not know, but I judge in this country it was about 12 grams. I do not think they are producing any across the water. There is no ore over there, you know.

Senator POINDEXTER. What has been the progress of the use of radium for surgical and medical purposes?

Mr. FLANNERY. Very good. It is very good in cancer.

Senator POINDEXTER. Has it been increasing?

Mr. FLANNERY. It was increasing until the war came, then all the doctors going away stopped buying until they came home. They do not want to put $5,000, $10,000 or $15,000 into radium and leaving it laying in a drawer, or some place, until they come home.

Senator POINDEXTER. What other uses are made of radium besides luminous watches and the medical use of it?

Mr. FLANNERY. That is all I know of, so far—that is, luminous dials for certain instruments. Nothing else that I know of so far.

## STATEMENT OF MR. ACHESON SMITH, VICE PRESIDENT AND GENERAL MANAGER, ACHESON GRAPHITE CO., NIAGARA FALLS, N. Y.

The CHAIRMAN. Mr. Smith, your company sent me a telegram and also wrote me a letter, to which I called your attention, relative to graphite. Will you state to the committee why you and your company feel that this matter should be considered by this committee as to whether or not this particular ore or metal should be excluded from the bill?

Mr. SMITH. Our concern is an electrochemical concern; our major product is electrodes. I might say in that connection that electrodes are used in the electric furnaces in producing various metals and carbides, and also in electrolytic work for producing chlorin. We also manufacture comparatively small amounts of amorphous graphite, which we call Acheson graphite. This is used for flash-light batteries, for ordinary flash lights, in dry cells, for field telephones, and things of that kind, a small amount in lubrication and for powder glazing, for the manufacture of small-arms ammunition. We sell it to the du Ponts and to the Picatiny Arsenal. As I stated, this graphite is an amorphous graphite and absolutely unsuitable for crucible making. The electrodes, of course, are nothing like crucible graphite, and it looked to me when this bill was drawn that the generic term "graphite" was used here rather inadvertently, and it was probably not realized at that time that it might include the artificial graphite, as our graphite is called, so that I suggest that the bill be amended by introducing some modification of this word "graphite." In talking with Mr. Mudd, of the Bureau of Mines, yesterday he suggested that we might insert the word "natural," which would include all natural or mined graphite, and exclude all furnace graphite. That would be perfectly satisfactory to us.

The CHAIRMAN. In other words, to confine the bill specifically to natural graphite?

Mr. SMITH. Yes; that apparently would carry out the intent of the framers of the bill. Then, in reading the testimony of the House Committee on Mines and Mining I found a statement of Dr. Smith and Dr. Manning which indicated they were trying to stimulate the flake graphite industry.

The CHAIRMAN. And the graphite that you manufacture you designate or call artificial graphite?

Mr. SMITH. Yes, sir; and it is not flake. I do not know whether the committee would care to look at samples of graphite or not, but I have here a small American flake of graphite, and here is a sample of Ceylon graphite; both those graphites are suitable for crucible making. This is a sample of amorphous graphite of our manufacture, which is a dead black powder. In crucible making the graphite has to have flaky formation in order to overlap, just as in paper making the fibers of the pulp have to overlap and make a continuous sheet of paper. It is the same in a crucible. It is mixed with an equal weight of clay, and these little flakes have to overlap, and if they do not you will have an article just like a clay article, wheras a good graphite crucible, when you break it, it will tear something like heavy paper and this amorphous graphite is no such product as that and can not be used; in fact, since the war we have tried to get crucible makers to use our graphite in crucible making, but with no success whatever.

Mr. MUDD. May I ask what percentage of your product is used in electrodes and what percentage is used for lubricants and other purposes?

Mr. SMITH. You mean what percentage of our output?

Mr. MUDD. Yes, sir.

Mr. SMITH. At the present time I would say about 90 per cent of our product is electrodes, and about 10 per cent graphite—that is, of our capacity.

Mr. MUDD. What proportion of the 10 per cent goes into lubricants?

Mr. SMITH. I could not tell you offhand. I do not have the figures in mind, but a comparatively small percentage of it.

Mr. MUDD. About what would be your output?

Mr. SMITH. I think our total output this year will probably run around 50,000,000 pounds.

Mr. MUDD. Ten per cent of that, or a fraction of 10 per cent of that might be considered as competitive with natural graphite?

Mr. SMITH. I think it is only fair to say that our product does not compete with natural graphite except in the lubrication field.

Mr. MUDD. Is not some natural graphite used in batteries?

Mr. SMITH. Practically none. It may be; under the present circumstances there may be a little used, but up until very recently there was absolutely none.

Mr. MUDD. Does your product for lubricant command a higher or a lower price than for electrodes?

Mr. Smith. We only sell it mixed with grease, so it is rather hard to get a comparison. Our prices are just about the same as some of our competitors.

Mr. MUDD. You manufacture the greases yourself; you mix them?

Mr. SMITH. Yes, sir.

Mr. MUDD. Your company has not been successful in the application of artificial graphite in the manufacture of crucibles?

Mr. SMITH. No; we have not.

Mr. MUDD. You are not conducting any experiments in that direction?

Mr. SMITH. No; there were some conducted years ago. I guess it was 17 or 18 years ago, now, and they were unsuccessful, and we have since sent out many samples to crucible makers, asking them to use it, but always without success.

Mr. MUDD. Would the term "natural graphite" meet your objection?

Mr. SMITH. Yes, sir.

Mr. MUDD. What do you know about the manufacture of artificial graphite from certain blast-furnace products, commonly known in the trade as kish?

Mr. SMITH. I really know nothing about it. That is simply the carbon that is thrown out of the metal as it cooled. Cast iron when it is very hot absorbs more carbon than when it is cooler, and especially in a pig-casting machine. What I mean is when a pig-casting machine is used the metal is chilled quickly, and when that chilling occurs the carbon is thrown out of this metal in the graphite form, and it is a flaky graphite.

Mr. MUDD. To what extent do you think that will compete with the natural flake graphite as a raw material in the manufacture of crucibles?

Mr. SMITH. I could not answer that because I have never seen it tried, and I think that would have to be answered by a crucible manufacturer.

Mr. MUDD. You understand by using the term "natural graphite" we exclude not only the product which you manufacture, but, in a sense, exclude this other material which may be competitive with flake graphite, or may be used as a substitue for flake graphite?

Mr. SMITH. I do not think that would be a disadvantage for the reason I do not think you could stimulate the manufacture of graphite in that way. That is simply an incindent in the casting of pig iron.

Mr. MUDD. There is one firm, and there may be more, who are considering that business; they have done quite a little work along that line. You do not know what progress they have made, do you?

Mr. SMITH. No, I am not familiar with it. If you wish to put the word "flake" there, it would be perfectly satisfactory to us. I think perhaps that would be a little more accurate than "natural."

Mr. MUDD. How would it be to put in the word "crystal."

Mr. SMITH. That is satisfactory; that is practically synonymous with "flake," I suppose, in this instance.

The CHAIRMAN. Mr. Smith, you manufacture electrodes for blast furnaces?

Mr. SMITH. For electric furnaces.

The CHAIRMAN. What is the situation relative to the manufacture of electrodes to-day; can you supply them?

Mr. SMITH. Well, the supply is just barely keeping pace with the demand. There are two kinds of electrodes on the market, carbon

electrodes and graphite electrodes. We manufacture graphite electrodes exclusively; we do not manufacture carbon electrodes, and at the present time there is a great demand for carbon electrodes, a greater demand than for graphite electrodes. I do not know how the supply of carbon electrodes is. I can only speak of the graphite electrodes side of it. The demand is quite insistent, and it is very hard to gauge the actual demand and compare it with the supply. Mr. H. H. Barber, of the War Industries Board, is handling the distribution of electrodes for Mr. Baruch. I was talking with him yesterday, and he said he had but very few complaints of electrode users of a shortage of electrodes on account of the fact that the distribution was quite satisfactorily handled.

The CHAIRMAN. There has been some testimony here by some of the witnesses that it was very hard to get their orders filled for electrdoes.

Mr. SMITH. Well, it would be for newcomers coming into the field. Anyone intending to build a furnace would probably find some difficulty in getting deliveries quickly. That would probably be the case. I might say for the electrode manufacturers of this country that we have made a very earnest effort to take care of the situation. Our own company is manufacturing between five and six times as many electrodes as we did two or three years ago, and while I am not familiar with the figures for the carbon makers I expect practically the same thing is true. I know they have made very large increases.

Dr. MANNING. I should like to ask if I understood Mr. Smith correctly to say that there is no difficulty in furnishing electrodes for the chlorine plants, speaking particularly with reference to the plants the Government has under construction now, gases to be used in warfare?

Mr. SMITH. We are taking care of that completely, and the first chlorine plant, which is a 50-ton plant, is now being erected, and I believe the electrodes are being delivered.

Dr. MANNING. That is a plant near Baltimore?

Mr. SMITH. Yes, that is all being cared for very nicely, and we foresaw that and provided for it. We have arranged our schedule to take care of all demands in the near future.

Mr. MUDD. When you say the electrode situation is being met, do you refer to the smaller sized electrodes, used in the electrolytic work in the manufacture of chlorine, or the large electrodes, 12 by 12, and larger sized, used by the large metallurgical plants?

Mr. SMITH. I meant all we manufacture; 12-inch diameter is the largest we make and that supplies the small electric furnace and, in fact, some of the larger electric furnaces used 12-inch diameter and, of course, all the chlorine plants.

Mr. MUDD. Can you furnish now, within a reasonable time, to fill an order, 12-inch electrodes?

Mr. SMITH. Well, we could not until next fall, sometime; no.

Mr. MUDD. That would be six months in delivery?

Mr. SMITH. I would say something like that. We are putting a large addition to one of our plants, and until that is completed and actually producing we could not make a delivery.

Mr. MUDD. What is the relative cost of graphite electrodes and carbon electrodes the same size?

Mr. SMITH. You mean point for point?

Mr. MUDD. Yes.

Mr. SMITH. I am not familiar with the prices of carbon electrodes at present, but our graphite electrodes have always been just about twice the size of carbon electrodes.

Senator POINDEXTER. Have you examined this bill, Mr. Smith?

Mr. SMITH. Yes, sir; I read it through.

Senator POINDEXTER. Have you considered it as to its effect upon your industry and similar industries?

Mr. SMITH. I have, of course, in reading it through, had in mind how it might affect us.

Senator POINDEXTER. What is your opinion of the bill?

Mr. SMITH. My opinion, Senator, is that it would accomplish nothing in our case. That is, that nothing could be accomplished by coming under this bill.

Senator POINDEXTER. Are they good or bad?

Mr. SMITH. Yes, sir. Well, I think something could be accomplished. That is bad, because it requires under certain conditions a license to be taken out, and perhaps reports made to the department which is handling this, and naturally we would like to avoid that sort of thing. We have a great many reports to make now and we do not want to take on any more work of that kind. It is absolutely unprofitable, of course, and especially in view of the fact that it would not accomplish anything. We are distributing our product and handling our affairs in perfect harmony with Mr. Baruch and those associated with him, and everything that could be accomplished by this bill could be accomplished by Mr. Baruch in a five-minute conversation with us.

Senator POINDEXTER. What percentage of the production of electrodes does your company produce?

Mr. SMITH. What percentage of the total production?

Senator POINDEXTER. Yes.

Mr. SMITH. I do not know what the others produce.

The CHAIRMAN. Your arrangements and workings with the War Industries Board then are perfectly satisfactory, are they?

Mr. SMITH. Yes, sir.

The CHAIRMAN. You are in touch with them and they are in touch with you?

Mr. SMITH. Yes, sir; perfectly. We report to one of the subcommittees every two weeks as to just where our product is going for the balance of the year. We have given them a schedule showing where every pound of our output for the balance of this year is going, and we revise it every two weeks.

Dr. SMITH. I should like to ask if you have had any difficulty in meeting your requirements in the matter of power?

Mr. SMITH. Yes; we have had very serious difficulties in that respect.

Dr. SMITH. Does that affect your output; is that a limiting factor in your output?

Mr. SMITH. Well, it is limiting it now. The situation is this, if you would like to know about it. We formerly had just one plant at Niagara Falls, and back, I think it was in 1915, we decided to add a new furnace room there in order to increase our capacity and to prepare to take care of our business that was increasing, and we built this

furnace room and equipped it. It cost us, I think, about $150,000. and some time after we got it operating, some few months afterwards. Canada began to commandeer power which was coming to the United States, and the power we were using in that furnace was taken away from us, so we were right back where we were before. Then we saw that something had to be done, so we investigated practically all the power situations in the eastern part of the United States, and finally decided to locate a plant near Buffalo to take power from the steam generating plant of the Buffalo General Electric Co. It was the best power arrangement we could make, and it was near home. We did build a plant there at a cost of something over a million dollars. We got it finished last summer, and we have been operating since that time with this steam generating electric power. We are now adding a furnace room to that plant, which will require about 2,000 horsepower more, and to get that we had to go to Mr. Robert J. Bulkley, who is the power director of this country, and to Gen. Kelley, of the War Department, and they assured us that they would see that we got power enough to operate this furnace room. We could not have gotten this power without their assistance.

Dr. SMITH. That is Niagara power?

Mr. SMITH. No; this is steam power from Buffalo—all of this. At the present time we are assured of power to operate this furnace room we are now building, but there is absolutely no chance of getting any more power, either in Buffalo or at Niagara Falls, unless more power is generated in Niagara Falls. As you gentlemen may know, there is a development being started for the additional development, which promises quite a large amount of additional power, and they expect to begin to deliver on that in some 10 or 12 months, and if that power is available we will probably increase our plant to utilize some portion of it.

## STATEMENT OF MR. CHARLES A. BUCK, VICE PRESIDENT OF THE BETHLEHEM STEEL CO.

The CHAIRMAN. What is your business, Mr. Buck?

Mr. BUCK. I am vice president of the Bethlehem Steel Co.

The CHAIRMAN. We have had considerable testimony here relative to the use of some of these rare metals mentioned in this bill in the manufacture of steel and those products which your company manufactures. That has been gone into quite fully. Without going into the metals and their production and the means thereof, I should like to take up directly the matters connected with the bill. You are familiar with this bill, are you not?

Mr. BUCK. Yes, sir.

The CHAIRMAN. Will you state to us your opinion of the bill and whether or not you feel that it is needed at this time?

Mr. BUCK. We are having no difficulty with the minerals and alloys that are mentioned in this bill as pertaining to steel. We think that the functions and relations that are going on at present with the Iron and Steel Institute, with the ferroalloys committee, working with the War Industries Board are bringing the results that are necessary for these products. I do not believe the bill is necessary. I think that the cooperation and coordination that is going on be-

tween the Geological Department of the Iron and Steel Institute, between the metallurgical departments, and then with the War Industries Board are as effective to bring about the results that are necessary, and I think the results that have been gotten during the past two years are very commendable evidence of it.

The CHAIRMAN. Are you in close cooperation with the War Industries Board?

Mr. BUCK. Yes, sir. I happen to be a member of the ferroalloys committee, working with the War Industries Board on matters of this sort.

The CHAIRMAN. Do you see any great good or future good that might come from legislation of this kind at this time?

Mr. BUCK. I do not think it would assist in any manner. I believe that the very functions that are working now would probably be—I do not think there is any doubt they are stronger than would be created by the bill in the production of these materials which you are referring to. Of course the most important ones are manganese and chromium and tungsten. Of course, manganese and chromium are the two important ones which the Government is interested in. In view of transportation they are the two serious ones that are taking shipping and are imported, and I believe the iron and steel industries are alive to the necessity for this shipping and are using every endeavor to use such other agencies and use other materials, endeavoring to accomplish the substitution of things, working out on that line, which can only be done by the industry of these men that feel the necessity of it.

The CHAIRMAN. I understand you are a member of the ferroalloys committee?

Mr. BUCK. Yes, sir.

The CHAIRMAN. That committee is part of the War Industries Board, is it?

Mr. BUCK. I would not say just that, Mr. Chairman. The ferroalloys committee is a committee of the Iron and Steel Institute, which is working with the War Industries Board in correspondence so that the War Industries Board, when they have any matter pertaining to exportation or assisting in any way, call that matter to the attention of the ferroalloys committee pertaining to these minerals.

The CHAIRMAN. Does this committee handle mostly the trades—the manufacturers?

Mr. BUCK. They handle the uses of these ores and the suggestions as to what improvements can be made in the uses of them, and very, very commendable changes have been made, very drastic changes have been made in their practices in order to assist them.

The CHAIRMAN. Do you know whether or not the War Industries Board of this ferroalloys committee takes up the matter of the production in this country of these ores and metals that you all use?

Mr. BUCK. The alloys committee are the people who are the users of these ores, either of the ore itself or of the alloys, so they are naturally interested in the development of the properties throughout the country. They are the ones who have the most intimate knowledge of these properties throughout the United States, and I think they are the ones who know as well as anybody, or as well as any

department, as to the true merits of them, as to whether they have merit and possibilities; so I think they are very close to them, Mr. Chairman.

The CHAIRMAN. They have in the War Industries Board men who are familiar with the conditions throughout the United States relative to the production of these ores and metals?

Mr. BUCK. I think so.

The CHAIRMAN. I do not know who the members of that are.

Mr. BUCK. Mr. Kelley and Mr. Farrell are on it.

The CHAIRMAN. That is the ferroalloys committee?

Mr. BUCK. The ferroalloys committee. In the War Industries Board Dr. Leith and Mr. Varden, who have been working in conjunction, have been attending the meetings when necessary, of the ferroalloys committee and trying to coordinate with them so as to bring about the results that are so desired, that really are indicated in this bill. There have been several conferences of that sort within the last month. One of them, a very important one, was held of the metallurgical men of the iron and steel business of this country with these gentlemen discussing diverse ways and means of the economies that could be applied, and new practices, so as to even use the materials which have not been used in this country heretofore.

The CHAIRMAN. I understand that the main object of the bill is to encourage the production of these metals that are greatly needed at this time in the manufacture of steel and other commodities needed in the prosecution of the war. Do you think that is a step farther than what the committees that you refer to would do?

Mr. BUCK. I do not think so, because I think properties of any merit throughout the country are being developed, and there is another equally important thing that these committees are taking up, equally important with these developments of properties—that is, the metallurgical side of them, and the uses of, for instance, manganese ores and chrome ores which have never been used in the United States, and they go hand in hand. One is as important as the other.

The CHAIRMAN. Of course your industry——

Mr. BUCK. You could not arbitrarily make some changes without a thorough knowledge of the other. You would not want to impress upon the industry of the country practices which it would make it so inefficient that it would mar your results, so they must be coordinated. I think you have that in these committees. I think you have that just as well as it can be accomplished. That is the reason I do not believe in the necessity of the bill. The motive of the bill is all right, but I do not think the final results would be attained as well as what is being accomplished now.

Senator POINDEXTER. Do any of these committees that you speak of deal with the question of priority of use?

Mr. BUCK. In the priorities of use the committees have acted. Take, for instance, manganese; if someone had wanted it or needed it these committees have practically within themselves reallocated cargoes of material so the industries have been taken care of. Is that what you mean?

Senator POINDEXTER. I mean if two or three applicants, say for chronium or for manganese came forward, is there in these commit-

tees any authority or practice to decide between various applicants when there is not a sufficient supply for all as to which shall have the priority of supply?

Mr. BUCK. That has not arisen. There has always been sufficient manganese ore, but there has been redistribution of manganese ores. For instance, one man may have a cargo coming in and he may not need it, and his inventories which are on file monthly before this committee, showing the condition of the materials that the various steel industries have, or the various manufacturers, immediately brings about the coordinative result of asking that man to turn his cargo over to somebody else, and that has been accomplished, it has been mutually agreed upon.

The CHAIRMAN. I understand that all of these companies or industries that use manganese, for instance, if one has a supply for a few months, and another would need some immediately for its uses, that they have agreed among themselves that the one with the supply on hand would turn some over to the one who needed it?

Mr. BUCK. That has been agreed on time and again.

The CHAIRMAN. And it has been done?

Mr. BUCK. It has been done. There have been producers and shippers of manganese ore in this country who have diverted their own ore, for instance, to others who have not been shippers of it in order to provide them.

The CHAIRMAN. Dr. Smith, do you wish to ask any questions?

Dr. SMITH. In speaking of the knowledge of the condition in the matter of ore supplies, did this committee, representing the consumers, believe and accept the Government estimates on manganese ore last year?

Mr. BUCK. Yes, sir; they did. I happened to be on the subcommittee which did that. We accepted the figures Dr. Leith presented, and from them we figured out their requirements. We took these figures in toto.

Dr. SMITH. At what time was that?

Mr. BUCK. That was within the last three months, I should say.

Dr. SMITH. I mean the advanced figures for 1917.

Mr. BUCK. The figures which were given, what they assumed they would produce in 1918, were taken as a basis of their operations.

Dr. SMITH. I am referring to the earlier figures, for 1917, which were discussed from the end of 1917.

Mr. BUCK. I am sorry, Dr. Smith, I was not a member of the committee at that time. I have come onto the committee in the place of the president of our company in the last four months, in view of my relation to these raw materials, because I am in charge of the raw materials of the company. I do not know what the practice or the consideration that was given to the matter at that time was.

Dr. SMITH. At the present time you say you do accept the Government figures on expected production for 1918?

Mr. BUCK. Yes, sir.

Dr. SMITH. Which is considerably in excess of actual production in 1917?

Mr. BUCK. Yes, sir; and I believe those ores are being acquired, and I think they are practically all acquired at the present time, to the best of my knowledge.

Dr. SMITH. I think it was Mr. Black that testified that he was much surprised at the actual production of high-grade manganese ore in 1917.

Mr. BUCK. There was considerable surprise, but the committee took the tonnage of ore as it was presented and used that as a basis of what they believed would be produced in 1918, and from that this fabric the requirements for 1918 has been built up.

Dr. SMITH. Yesterday Mr. Kerr spoke of the use by the Steel Corporation of some Brazilian ore in making spiegel. Has that practice been at all common?

Mr. BUCK. I did not know of that practice. I heard Mr. Black speak of it here. Our own company are using Cuyuna Range ores and zinc cinder in the making of spiegel, but there is a limited tonnage of Cuyuna Range ores low enough in phosphorus for that particular use.

Dr. SMITH. And that use of the zinc residuums has extended back over a considerable period.

Mr. BUCK. A considerable time; yes, sir. We have used zinc cinder for a considerable number of years in the making of spiegel, and also used it in the introduction of manganese into pig iron, which is going to be a development this year as a further saving of the residuum manganese we will leave in the bath from recarbonizing. That is, I think, going to be an important development during 1918.

Dr. SMITH. You have considerable confidence in the possibilities of these improved practices, have you not?

Mr. BUCK. I do have considerable confidence in them, that they will go on. I think the industry is alive to the opportunities of the thing, but I do not think any radical change can occur immediately; I think it has to be developed so that a comprehension is had as to their finished product, so as to not impair the finished product of steel they produce. I think that is going on very rapidly, especially in the last 60 or 90 days. I think there has been a radical departure in the use of——

Dr. SMITH. The net result of that will be a smaller requirement of the high-grade and a larger use of the low-grade ores?

Mr. BUCK. Yes, sir.

Dr. SMITH. Thus meeting in a way the situation as we have it in the domestic ore supplies?

Mr. BUCK. Yes, sir.

Senator POINDEXTER. I should like to have you explain again. I did not quite understand your statement in regard to the saving of manganese in the production of pig iron.

Mr. BUCK. It is possible, Senator, to introduce manganese into pig iron and in some methods of making steel maybe 40 per cent or 50 per cent of that manganese is retained in the bath during its purification, and that is true of what is known as the basic open-hearth steel making, so that the requirement of manganese, of the additions of manganese, is what gives force and fineness and quality, and if conditions are very much reduced in these particular instances.

Senator POINDEXTER. Under previous practices you combined certain quantities of ferromanganese with the iron, did you, before making the pig, or was it contained in the iron ore?

Mr. BUCK. I shall have to tell you a bit of history, Mr. Senator, in order to have you understand that. Prior to this war ferromanganese

came into this country, was not only produced in the country but came into the country so cheaply that ferromanganese was very generally employed in the steel industry, and our own ores in this country were not the equal in quality as pertaining to the impurities, and especially as to phosphorus, as compared with foreign ores, so that the whole steel industry of this country was built up basicly with the use of ferromanganese made in this country to only a small degree. Now, from that all these different changes are coming in with the use of our more impure materials, and ways and means devised metallurgically so they can be used, so we are going through that evolution now. That is the reason I say this bill is not the essential thing. There is something more important here—that is, within the industry itself, which can be done, and I think everyone in this country realizes their patriotic duty, and, I think, they are going to be created and they are being created.

Senator POINDEXTER. I understood you to say that your committee was devoting all the scientific results available toward the conservation of manganese?

Mr. BUCK. Yes, sir.

Senator POINDEXTER. Do you think nothing could be added to your endeavors toward conservation?

Mr. BUCK. No, I do not, because we are calling in the men of this country that know this business, that is, the metallurgists of the iron and steel business, men who, like everyone else, are trying to do what is right, and I think they are accomplishing that and are as well fitted in that way as anyone.

Senator POINDEXTER. Under the change that you make by which a greater quantity of the manganese is retained in the vat and in the pig iron, do you mix with the iron before it is——

Mr. BUCK. Manganiferous iron ore.

Senator POINDEXTER. Have you been using that manganiferous iron ore heretofore?

Mr. BUCK. No, not to any marked degree; in a small degree. That is coming off of the Cuyuna Range quite largely.

Senator POINDEXTER. By the use of that, as I understand it, and by retaining it in the pig you are relieved of the use of it afterward?

Mr. BUCK. A percentage use of your ferromanganese, say, 40 to 50 per cent, by that you are relieved of using a larger amount of your ferromanganese or your spiegel, either one. There are certain grades of steel in which spiegel can be used, in which there is more of a general application taking place in this country, and the limiting feature of that is the carbonate of steel, the limiting use of spiegel.

Senator POINDEXTER. What has been the reason heretofore for not using manganese iron ore?

Mr. BUCK. That is a development of the art, of the trade, I would say, more than anything else. That is the one thing which has been brought out in view of this war, and I think will be much more of a prevalent practice, of a general practice in the future than it ever has been before.

Senator POINDEXTER. What about the supply in this country of manganiferous iron ore?

Mr. BUCK. There is quite sufficient.

Senator POINDEXTER. Where is the Cuyuna Range you speak of?

Mr. BUCK. I would rather have the Bureau of Mines tell you geographically. It is one of the western ranges.

Dr. SMITH. It is in northwestern Minnesota.

Mr. MACBETH. Mr. Buck, what percentage of the manganese importation and domestic production did the steel manufacturers use during the year 1917, approximately?

Mr. BUCK. What percentage of foreign?

Mr. MACBETH. Of importation and domestic production of manganese ore did the steel manufacturers use in 1917, that is, approximately?

Mr. BUCK. That is of the ores?

Mr. MACBETH. Yes.

Mr. BUCK. I do not know that I can give you the tonnage of ore. I can tell you this, the consumption of ferromanganese, which is easily figured back, was 2,500 tons a month on the average for 1917. It was estimated that with the increased requirements of steel in this country for 1918, that that requirement might be 28,000 to 30,000 tons of ferro. That does not include these tonnages—the tonnage of ferromanganese which they propose to furnish to Canada. Great Britain is calling, I believe, upon the United States, to furnish something like 15,000 or 16,000 tons of ferromanganese to Canada, because of the importation of manganese ores into Great Britain and the natural economy of transportation to the United States as against Great Britain. Do I answer your question?

Mr. MACBETH. No; I do not believe you do. My point is this. One of the provisions of this bill is for the purpose of providing the manufacturers of steel with manganese. What I am trying to arrive at is this. What percentage of the manganese importation and production for the year 1917 do the steel manufacturers use?

Mr. BUCK. I would like to give it to you, but I do not think I can. I have seen figures, but I would not want to quote them; I do not know that I have them in mind.

Mr. MACBETH. Have you any knowledge of the common situation with respect to importation?

Mr. BUCK. Just in this alloys committee. It has been discussed, and I have heard all the interested parties give their views on it.

Mr. MACBETH. How much ferro chorme was used in 1917?

Mr. BUCK. The requirement of ferrochorme was estimated; I can not estimate it here in terms of ferrochrome, but the requirement of it for chorme for 1918 was figured at 75 tons.

Mr. MACBETH. The steel companies use by far the greater proportion of ferro and of manganese ores imported and produced in 1917?

Mr. BUCK. Oh, yes, and the steel industry would be the chief users of manganese by far; the use by the chemical trade is small, and the use by the photographers is small, so that I do not know what the proportion is, but it would be a very great proportion. It is largely used in iron and steel consumption.

The CHAIRMAN. Mr. Buck, I think what Mr. Macbeth wanted to get, if he could, approximately, was this: We import approximately 600,000 tons of manganese?

Mr. BUCK. Yes, manganese ore.

The CHAIRMAN. We produce in this country—that is, in 1917, as I understand it—we produced about 120,000 tons.

Mr. BUCK. Yes.

The CHAIRMAN. That would make, say, a use altogether of 720,000 tons?

Mr. BUCK. Yes.

The CHAIRMAN. How much of that 720,000 tons did the steel industry use?

Mr. BUCK. That is very largely used in iron and steel production. The percentages of manganese that are used outside of the iron and steel trade are extremely small. There is a little use of manganese in dioxide battery use, and all of the use of the manganese is very largely in the iron and steel business.

Mr. WHITE. It would be at least 95 per cent?

Mr. BUCK. At least that. I would say almost 99 per cent.

Mr. WHITE. The estimate is all the way from 20,000 to 40,000 tons for the battery trade, is it not?

Mr. BUCK. They hardly use it now.

Mr. MUDD. Mr. Chairman, your figure ought to be increased by 120,000 tons.

The CHAIRMAN. I only said approximately. I understood it was about 800,000 tons used, of which about 600,000 tons I had in mind was imported and 200,000 tons domestic, but, of course, part of that you say is ferromanganese.

Mr. BUCK. There is a condition coming on right now which makes important this importation, or greater production of manganese ore, and that is they are going to stop the importation of ferromanganese into this country, because it is folly for Great Britain to be transporting manganese ore into our country, and especially now, from Brazil right past our door to Great Britain and then send it back to us in the form of ferromanganese, so that requirement will be increased. There is considerable use in high manganese steels for shield plates, and poilus' helmets, which is being discussed, and it is not known to-day just what additional requirement there will be due to the developments. That is important, but I think it is in good hands the way it is being conducted, and I believe everybody is sincere about it in the effort to accomplish the end that is intended in this bill.

Mr. SMITH. Mr. Mudd asked me what our production would be this year, and I stated about 50,000,000 pounds. I should like to change that to 40,000,000. I failed to take several things into consideration. It was just a mental calculation.

(Thereupon, at 1.45 o'clock p. m., the committee adjourned until to-morrow morning, Saturday, May 18, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

**SATURDAY, MAY 18, 1918.**

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met at 10 o'clock a. m. pursuant to adjournment, at room 450, Senate Office Building, Senator Charles B. Henderson (chairman) presiding.

Present: Senator Jones of New Mexico and Senator Shafroth.

The CHAIRMAN. I think we might as well proceed, gentlemen.

I noticed in this morning's Washington Post an item of interest which, it seems to me, is pertinent to the inquiry being made by this committee in the consideration of the bill that is before us. Without objection, it will be printed in the record.

MAY TAKE STEEL MILLS—WAR INDUSTRIES BOARD ORDERS SURVEY TO DETERMINE ACTION—OFFICIALS FEAR A SHORTAGE—MANUFACTURERS AT CONFERENCE OBJECT, AGREEING TO FURNISH ADEQUATE SUPPLY IF GIVEN FIGURES ON NEEDS—COMMITTEE APPOINTED TO OBTAIN THE DATA FOR FEDERAL OFFICIALS.

Government operation of the steel mills of the country may be sought if the joint steel committee appointed yesterday representing the War Industris Board and the American Iron and Steel Institute fails to agree on steps to increase production for Government and the allies' needs, and restrict nonwar consumption.

Chairman Baruch and his chief aids, J. Leonard Repogle, director of steel supply, and Alexander Legge, chairman of the requirements division of the War Industries Board, are understood to be prepared to ask President Wilson to take drastic action the moment they are convinced that is the only way to get increased production.

The steel men understand the situation, although the subject has been considered by officials so delicate that it has not been touched on in the conferences. That serious consideration has been given commandeering developed yesterday, although it was said such action would be taken only as a last resort.

It is known that most members of the board, but particularly Mr. Repogle, feel that the steel shortage is real, and not merely a matter of fuel and transportation. They are said to hold that drastic curtailment of all lesser industries is imperative.

Any move toward Government control will meet with determined opposition from the steel men, and even certain officials of the war-making agencies who are said to believe to a degree in "business as usual."

## STATEMENT OF MR. CHARLES A. GRAY, OF SAN FRANCISCO.

The CHAIRMAN. In what business are you engaged, Mr. Gray?

Mr. GRAY. By profession I am an attorney at law. I am somewhat interested in the antimony situation.

I have been inspired to make a short statement because I did not find anything in the House record or very much in the evidence given

here with reference to antimony. There is an allusion to antimony here and there, but I thought it might assist the committee and at least give an opportunity to the gentlemen who are better informed than I am as to the antimony situation to get into the record the facts concerning that metal.

The CHAIRMAN. Antimony is one of the metals referred to in this bill?

Mr. GRAY. Yes, sir.

The CHAIRMAN. You have read this bill and given it some consideration?

Mr. GRAY. Yes, sir. I have examined the bill and I think I am somewhat familiar with its provisions.

The CHAIRMAN. Will you proceed with your statement relative to the antimony situation?

Mr. GRAY. Antimony is a metal which is essential for war use. It is a minor metal in that the tonnage involved is not large. It is essential for the production of type metal, antifriction metal, babbitts, acid lead, and is used as a substitute for tin oxide in enameling, but the important use, in munition making, is the hardening of bullets, shrapnel making, spotting shells, and I believe there is also some minor use in the making of primers. There are a number of subsidiary uses, but those are the main uses.

The main place where antimony is produced to-day, so far as we are concerned, is China. I think it must be admitted that in a free market, with transportation facilities uninterrupted, antimony for use in this country would continue normally to be made in China. If this country can spare shipping and desires to produce here only those things which may be produced most economically here, and exchange those things for goods which can be produced most economically elsewhere, under those conditions I am free to admit that antimony would probably continue to be made in China and sent over here and traded for goods which we can make more economically than they can be made there.

The amount of imports of antimony consumed in the year 1917 was about 30,000 tons of shipping. I do not mean to say that there were 30,000 tons imported. The figures show about 17,000 or 18,000 in the metal form, that is, including matte, and that there was about 9,000 tons that came over in the form of ore.

Now, the metal has to be crated, and the tare is about 10 per cent. Some of the metal was in the form of matte, which contains at best only 72 per cent of metal, so that there was actually involved about 30,000 tons of shipping. Of that 30,000 tons of shipping, most of it came from China. If that 30,000 tons of shipping had been employed at one time to take this metal across the Pacific Ocean, it would have taken two months. Now, in two months' time, three round trips can be made across the Atlantic. The time element, therefore, enters, and in the same space of time that it would take to ship or transport across the Pacific 30,000 tons of antimony, you can transport 90,000 tons across the Atlantic Ocean.

The reference in the record to antimony is that it is a question of such small tonnage that it is hardly worth considering, but I say that in six months or a year from now, with this country straining every nerve to supply the dire necessities of the boys "over there,"

90,000 tons will not be small. Ninety thousand tons is equal to 180 million pounds, and translated into terms of foodstuffs, that means something.

We have in this country numerous bodies of low grade antimony, but we do not have any large bodies of high grade antimony ore. The present producers in this country do not use the volatilization process, which is probably the only process that can be used on the lean ores.

There are, of course, subsidiary sources of ore in Bolivia and Mexico. If you are to rely upon Bolivia as a source of antimony, you have got to get about 50,000 tons of the Bolivian ore. Assuming that they could ship 50 per cent ore we would have to double, first off, the 17,000 or 18,000 tons, and the extraction from that, doubling the 17,000 or 18,00 tons, would be only 65 or 70 per cent metal, so that you would have to transport from Bolivia, in place of the 17,000 or 18,000 tons of metal that is now produced in China, 50,000 tons of the Bolivian ores.

The condition in Mexico is more or less uncertain and unsettled. Whether or not you gentlemen will feel safe in relying on Mexico as a source, of course you know better than I, but that source at best is unsafe, so that there is considerable question regarding the safety of either one of those sources of supply—China, Mexico, and Bolivia.

Now, it will be said, and has been said, that the price to be paid for the production of antimony in this country is too great. We are now paying a low price for this metal here. I was informed by a member of the Government yesterday that the Government had purchased 1,000 tons at 12½ cents. The prewar price was between 8 and 9 cents in this country. That, of course, is cheaper than it can be manufactured in this country at present. If we develop large bodies of the low grade ore, it is probable that in the course of time we can compete with China's price. In China, as you know, they have the cheapest labor market in the world, and labor enters very largely into the production of antimonial ores.

The price, as I have said, has been between 8 and 9 cents. It is now around 12½ cents. It did shoot up, the last part of 1915, and the early part of 1916, to something like 45 cents. I have even heard of shipments as high as 50 cents.

In England, since the middle of 1915, the price has been stabilized at about 19½ cents per pound. If that price was stabilized in this country, I am confident we would produce all our needs here. It would cost a little money, yes, and I have no doubt but that the Chinese ore or Chinese metal on this market can still continue to be had at around 13 or 14 cents; but I say that the cost is trifling when you consider the fact that it means 180,000,000 pounds of ammunition or of food going across the Atlantic ocean; the trifling cost of putting the American antimony industry where it can protect the country's needs is too insignificant to be considered.

An illustration of the effect of the potential competition we have in America is shown in the difference between the price of antimony crude in this country and in England; that is, the relative difference between the price of the crude and the metal itself. In England the price of the metal itself has been stabilized at about 19½ cents. In this country the price has gone from a prewar price of 8 or 9

cents up to 45 cents and back again to 12½ cents. The price level here has been fairly steady for some months. In England the price of crude has been about 9½ cents, while in this country the price of crude has been higher than the price of the refined metal. It may be that the explanation is to be found in that fact that we have no plants in this country for the production of it; that is, we have no plants that have been producing the crude.

I will say with reference to the English price that there is a differential of about 5 or 10 pounds a long ton in favor of the English refined metal.

With particular reference to this bill, I believe that there are two things necessary, if it is desired to create an American industry in antimony. One of the two things I refer to, is the fixing of a minimum price and the stabilizing of that price, so that the producer will know what he can get 18 months or 2 years from now. At the same time, there should be some means in the hands of the Government to equalize the difference between the Chinese made metal and the American made metal. As a matter of fact, in view of possible action, the Chinese refineries have been putting the metal into the bonded warehouse of this country to the tune of about 3,000,000 pounds a month. There is now in bonded storage something like 10,000,000 pounds in this country, most of which has come from China.

Senator SHAFROTH. How much do you think ought to be produced by the United States?

Mr. GRAY. I think about 20,000 tons was needed last year.

Senator SHAFROTH. You say that they are putting it in now?

Mr. GRAY. As high as 3,000,000 pounds a month.

Senator SHAFROTH. What is our need?

Mr. GRAY. Twenty thousand tons a year.

Senator SHAFROTH. That would be how many pounds?

Mr. GRAY. Forty million pounds.

Senator SHAFROTH. Is there any difficulty in getting that ore over here from China?

Mr. GRAY. Not any except for shipping. As long as you wish to invest the shipping, it can be obtained.

Senator SHAFROTH. What is the ordinary price they sell for?

Mr. GRAY. The ordinary price?

Senator SHAFROTH. Yes.

Mr. GRAY. You mean at the present time, Senator?

Senator SHAFROTH. Before the war.

Mr. GRAY. Between 8 and 9 cents.

Senator SHAFROTH. What is it now?

Mr. GRAY. The last sale I heard of was 12½ cents.

Senator SHAFROTH. If you put a tariff on the imports of that, how much tariff would you put on it?

Mr. GRAY. If you intended to produce the metal in this country, the tariff would have to be large enough to make up the difference between the Chinese cost and the minimum price, if any is fixed.

Senator SHAFROTH. What is that cost or charge in China?

Mr. GRAY. That is a very difficult question to answer, Senator. We have given that our best attention. The pre-war cost was probably not greater than 6 cents landed in New York.

Senator SHAFROTH. Then you would want a duty, probably, of 100 per cent.

Mr. GRAY. I will say that the representative of the Wah Chang people is Mr. Li, of New York. He says that the cost of Chinese metal now, laid down in New York, is about 13 cents. I do not say that that is the cost.

Senator SHAFROTH. So, in addition to, or accompanying the minimum price that you fix, you would want the right to impose a duty that is sufficient to make up the difference between the cost there and here.

Mr. GRAY. The whole situation is this: If a minimum price is fixed sufficient to bring out American production, that price would have to be higher than the Chinese cost plus a profit, so that if a minimum price were fixed and the Chinese metal were still permitted to come in, it would throw a burden upon the Government without improving the domestic situation.

The President, under this bill, is authorized to ascertain and proclaim the facts, and fix a temporary duty for the purpose of equalizing the difference.

Senator SHAFROTH. You believe in fixing a minimum price?

Mr. GRAY. With reference to this metal I do, for the purpose desired, to bring out the production of the metal.

Senator SHAFROTH. Are you in favor of a maximum price?

Mr. GRAY. I am not. I think it would discourage production.

Senator SHAFROTH. Unless you get it so high that it is practically no maximum at all?

Mr. GRAY. Certainly.

Senator SHAFROTH. I agree with you.

Senator JONES. How has England stabilized the price?

Mr. GRAY. By buying the metal from the refiners.

Senator JONES. Is that the way you suggest we should do?

Mr. GRAY. There are two methods, antimony, of course, is necessarily used in our industries. If the foreign ore or metal is excluded, or regulated so that it does not come naturally into this market, our own producers could then sell the domestic metal at the minimum fixed price. If measures were taken to stimulate the antimony industry in this country, so that more was produced in two years than the industry would take, there would be a surplus which the Government would be obliged to take. I am frank to say that I do not believe we could so stimulate the American industry as to produce all that is needed, however.

Senator JONES. What is the source of the domestic supply?

Mr. GRAY. Do you mean of our own domestic production?

Senator JONES. Yes.

Mr. GRAY. Our domestic production has dropped away to practically nothing. Considerable metal was produced in this country during 1915 and 1916. We have smelted in this country Bolivian ore, Mexican ore, and some California ore. Mr. Elsasser(?) produced a considerable tonnage from the Wild Rose mine of California. He has been operating largely on Mexican and South American ores. However, since the low price of the metal, there has been no American production, practically speaking.

Senator JONES. Where could we get sufficient supply in the United States?

Mr. GRAY. California, Nevada, Oregon, and Washington; and, I understand, Idaho has some large ore deposits.

Senator JONES. I do not know what you have said so far about the production of the metal, but if you have not already stated it, I wish you would state how this particular metal is found, in what formation..

Mr. GRAY. It occurs in pockets and veins, ordinarily, and sometimes in true fissure veins. The deposits are sometimes venticular. In China the mines have gone to considerable depths. Their records of some mines show 2,000 feet. The mines in this country have not been developed enough to demonstrate how deep the ore goes.

Senator JONES. In what quantity has it been found or prospected?

Mr. GRAY. Senator, I only have knowledge of one location. We have here with us a man who is well versed in the subject and who has seen a great many of these deposits. Of my own knowledge, I can speak of only one, near Austin, Nev. The development work has gone to a considerable extent on that. There is now a considerable tonnage in sight. The ore horizon is regular. The veins are well defined. There is undoubtedly a large tonnage there.

Senator JONES. What is the thickness of the veins?

Mr. GRAY. Fourteen to 40 feet.

Senator JONES. What per cent of metal does the ore carry?

Mr. GRAY. 14 to 15 per cent. It is a low grade proposition. Perhaps I had not stated, Senator, that our low grade ores in this country are workable, probably, only by the volatilization method, as against the process used for high grade ores. Stibnite is the chief ore of antimony.

Senator JONES. You could not hope immediately to supply this country with the domestic metal?

Mr. GRAY. I understand that the Western Metals Co., of Los Angeles, has a daily capacity of ten tons of metal. Its present source, however, is largely Mexican ore.

The Magnolia Metals Co. of New York has been working on Bolivian ores. It has not, so far as I know, been operating very largely on domestic ores. There was a large tonnage of high grade ores in the old days shipped out of a Nevada mine to England. The mine that I speak of is located in the Big Creek district. In the same range, very close to this particular mine is the mine I partially described a few moments ago. Out West are a great many prospects of low grade antimony ore. They have not been largely developed, because there has not been a reward great enough to justify development.

Senator JONES. That metal company of Los Angeles, which has been treating imported ores, did it construct its works specifically for that purpose?

Mr. GRAY. Yes, sir. Mr. Elsasser, I may say, is practically the best informed man on antimony in the United States.

Senator JONES. Who is that?

Mr. GRAY. Mr. Elsasser. He was in charge of the Cookson operations in Mexico. Cookson had for years the antimony market.

Senator JONES. Did this New York concern to which you have referred, construct its plant for the purpose of treating foreign ores?

Mr. GRAY. That concern is one of the large consumers of babbitt metal. It has been in the market largely for years. I do not know that it was particularly constructed for that purpose. I have no doubt it had that in view.

Senator JONES. I was wondering whether or not the plan you suggest would interfere with their plants.

Mr. GRAY. They could use American ore in those particular plants. The miner, Senator, when you say "antimony" has been ready to move away from the place. It is a sort of hoodoo. I saw it referred to in the Mining and Scientific Press as the "ugly duckling" of the antimony world. It is a hard, brittle metal; it is a metal that is used only in combination with other substances. The Chinese means of production have been so extensive that there has been no particular incentive for the production of the metal from American sources.

Senator JONES. You say that, so far as you know, this ore runs about 14 per cent?

Mr. GRAY. Yes, sir.

Senator JONES. To produce the American requirements of antimony, the metal, how many tons of that ore would be necessary to mine?

Mr. GRAY. The extraction depends upon the method used. I think if you take 75 per cent, you would be using as high an extraction figure as could be obtained immediately. Then you would have to mine, probably, eight or ten tons of the ore to one ton of the metal. I have not figured it out, but I believe that is a pretty good guess.

Senator JONES. Is that mine in Nevada equipped with a concentrating plant?

Mr. GRAY. It erected a volatilization plant in San Francisco and shipped some of this ore for treatment down there. The plant was, to a considerable extent, an experimental plant. The mine has not been equipped in a large way. It has been opened up a number of hundred feet, but it has not ben equipped with a plant, and it should be equipped with a complete plant.

Senator JONES. How long would it require to equip it?

Mr. GRAY. To properly equip would take a few months. The difficulty of obtaining at this time necessary supplies and necessary machinery is obvious. But, after all, the equipment of a plant of this sort is not extensive. It is equipped with air compresses, air drills, crushers and furnaces, and after that start, jigs could be put in. Later on, a ball mill could be put in.

Senator JONES. How long do you think it would require to develop in this country a supply of this metal necessary to meet our requirements?

Mr. GRAY. Of course, we are now embarking upon the sea of speculation, Senator. The American mining industry has always shown itself quick to take advantage of any opportunity offered. There are large supplies of low-grade ores. If the price is at a good figure and is stabilized for a sufficient length of time so that the operator can be more or less sure that when he has his product ready for the market it can be sold, I would think that in a year's time we would be well on the way to supplying our own needs. In the meantime, there would be a considerable production almost at once.

Senator JONES. For what length of time would you guarantee a minimum price?

Mr. GRAY. The miner is one of the most cheerful gamblers in the world. He would probably take a chance on a two years' price. He may lose money if the bars are allowed to come down, and the Chinese metal comes in freely at the end of two years.

Senator JONES. At what price would you fix it?

Mr. GRAY. I believe a price equivalent to the English price, between 19 and 20 cents, would probably bring out the American production.

Senator JONES. Would you give a blanket guaranty of 19 or 20 cents for all the antimony that could be produced in the next two years?

Mr. GRAY. I see no other way to accomplish the result if the maximum production is desired.

Senator JONES. Have you in mind the estimated quantity of antimony we might expect at that price during that time?

Mr. GRAY. I think the supply forth coming would be sufficient to meet our demands.

Senator JONES. Have you any reason or any assurance that it would not much exceed our needs?

Mr. GRAY. Well, Senator, two years is not a very long time. In order to get the metal, first, the ore must be uncovered; the bodies must be developed. Some plant of some sort must be put in to make it available for refining, and plants suitable for extracting metal must be erected. Two years is not a very long time to do all that.

Senator JONES. Take that one mine that we have there. You spoke of a mine, I think, which you said had a vein from 10 to 40 feet in width, or 14 to 40 feet in width. Is that comparatively uniform ore?

Mr. GRAY. So far as it has been opened up, it is practically uniform. There is a large quantity of low-grade ore in the cropping.

Senator JONES. Has that ever been explored for any considerable length?

Mr. GRAY. I could not say how far it has been explored. They have ore on the 100-foot level and they are driving for it, or have been, on the 200-foot level. If they find it on that level they will have demonstrated a very large body of ore.

Senator JONES. Is it not probable that one mine could be made to produce all we need?

Mr. GRAY. No; not without putting so much equipment on that mine that at the end of the two-year period, if it is only a two-years period, you would have a tremendous equipment for such a body of ore. The difficulty, of course, of getting the maximum production in a short space of time is the overequipping of the property.

Senator JONES. You suggest a price of 19 or 20 cents, which is not much less than the price of copper, and they are working copper ore which runs only about 1 per cent or 1½ per cent.

Mr. GRAY. The situation, in my opinion, is not at all comparable.

Senator JONES. I am not quite sure that they are comparable in all phases, but there is such a wide difference between the 1 per cent ore, and the 14 per cent ore.

Mr. GRAY. Senator, you would have me gasping for breath shortly, if I went into the details of the production of ore. Mr. Layng, who

has had a great deal of experience, can give you the cost of opening up a property on a small tonnage. The copper industry, as you know, is a perfectly huge one, and the overhead cost is distributed over a terrific tonnage. On the other hand, antimony has very slight tonnage, and a copper man can not see 20,000 tons; with reference to antimony the overhead has to be covered by 20,000 tons, and the price necessarily must be higher.

Senator JONES. The consumption of the metal—antimony metal—in this country, I believe you said, was about 20,000 tons.

Mr. GRAY. About that, using round figures. The importations last year were a little more than that. It ran about 46,000,000 pounds. A great deal went into storage.

Senator JONES. At 20 cents a pound, what would the total bill be?

Mr. GRAY. That would be about $8,000,000.

Senator SHAFROTH. Could you not regulate the quantity that could be produced by permitting the Bureau of Mines, or whoever is going to administer this matter, to make contracts with the mines?

Mr. GRAY. Yes, sir; certainly.

Senator SHAFROTH. Saying that we would buy up to 40,000,000 pounds, and making contracts with each mine, would have a tendency to curb excess production and thereby lessen the liability of the Government to pay for more than it wants?

Mr. GRAY. If power could be given to the Bureau of Mines to make specific contracts with specific mines for specific amounts, that would be a limitation to a certain extent upon the production or output.

Senator SHAFROTH. Of course; you would not have the free working of the law of supply and demand, but at the same time it would curb the liability of the United States for payment of a large excess quantity of production?

Mr. GRAY. I think the time limit, perhaps, is so short as to guarantee that there can not be a large excess. In fact, the total amount involved in regard to the antimony industry is comparatively small. You have heard much about the terrific tonnage involved in the manganese proposition, but with antimony it is different; although when you consider that its tonnage means that about 180,000,000 pounds of munitions or foodstuffs could be transported in its place across the Atlantic it is far from being insignificant. In that view, if the time comes when we are put to it to supply the men that we are now taking over to France, the 180,000,000 pounds of supply will loom up larger than it does to-day.

The CHAIRMAN. In what bottoms is this ore shipped from China to this country?

Mr. GRAY. I do not know.

Senator SHAFROTH. I wish, Mr. Gray, that you would state your view as to that provision of the bill relating to licenses, or the issuance of licenses and the control which the Bureau of Mines would have by virtue of the licenses, and whether you think that would have a tendency to increase the domestic production?

Mr. GRAY. I think, Senator, that my personal view is not worth much, but my personal opinion is that we are not in normal times; that this Nation is engaged only in one job, and that is winning this war. We need agencies with sufficient power to direct the entire

energies of this country along that line. Private initiative is, I grant, most of the time to be desired over governmental supervision, but I do believe that we should select in this country a responsible agency to direct our individual energies collectively, and for that reason I believe, personally, that the bill would be a good thing, and that the licensing provisions are very much to be desired.

Senator SHAFROTH. Under this licensing provision there is a provision that they may prevent excessive prices by limiting the profits that can be made by all except the producer, I guess. If that is a guaranteed amount, is that wise or not wise, in your judgment?

Mr. GRAY. I believe, Senator, that such a power might be abused, but I believe that if the power is invested in responsible hands and properly exercised, it would be a good thing. It may be properly or improperly exercised, of course. Any powers which are exercised wrongly may produce harm, but it seems to me that what is needed is the power to produce the desired result.

Senator SHAFROTH. That part of the power, as I understand it, is aimed against exorbitant profiteering. Could not that be reached just as well and more equitably by the imposition of the war-profits tax, thereby making the party who makes an excessive profit yield to the Government that proportion that the Government needs?

Mr. GRAY. Yes.

Senator SHAFROTH. It would be a damper upon his excess profiteering with reference to his product.

Mr. GRAY. Senator, certainly the operation of the excess-profits tax has a very modifying effect upon any proposed operation. If, for instance, on a two years' guaranty, such as is proposed here, a large investment is made, and then when it comes to charging off or amortizing that investment it is considered by the gentleman who imposes the excess-profits tax that you have 10 years to write off that plant, where, as a matter of fact, after 2 years you would not be able to use it, it would have a modifying effect upon the enthusiasm of those who went into the business. In that view, the action of the excess-profits tax would not be as proper as an exercise of the discretion of a central body in charge of the operation of this sort of a bill, in my opinion.

Senator SHAFROTH. Would the exercise of the power contained in this bill by the cutting down of profits as a prevention of profiteering have a tendency to make that minimum price a fixed maximum also?

Mr. GRAY. I do not think so.

Senator SHAFROTH. You do not?

Mr. GRAY. Of course, it depends upon the relation of the outside supply. We have two classes of metals under consideration in this bill. Antimony, for instance, is produced outside, and, if the natural channels of trade are left open, will flow into this country. On the other hand, we have metals produced only in this country, with which we are endeavoring to supply our allies. As to those metals, there is no outside production. The demand is greater than the production in some cases, in which event the price has a tendency to rise. On the other hand, as to antimony, a guaranteed price will at once become the maximum price, because any higher price, unless a duty were fixed or imposed upon the foreign metal so as to more

than equalize the cost of production, would mean that the foreign metal would come in.

Senator SHAFROTH. In the case of wheat, which we have experimented with, there has been a minimum price fixed by the law. There is no maximum price fixed, except indirectly, which is by the Government licensing the mills. They say that you can pay only a certain price for wheat. The effect has been to make wheat, in many parts of the United States, lower than the corresponding cereals, which has caused farmers to feed wheat to the animals, and that is directly antagonistic to what was intended to be accomplished.

Mr. GRAY. In using those terms "minimum" and "maximum," I would like to be understood as thinking that the situation with reference to wheat was a maximum price or a fixed price, a fixed price at which it must be sold.

Senator SHAFROTH. That is not the law. The law simply gives licensing power.

Mr. GRAY. But it really fixes a maximum price. On the other hand, if a minimum price had been fixed, and if there was less wheat that was demanded, the price would have risen.

Senator SHAFROTH. Of course, you understand that rye and barley have both gone up very much in excess of wheat. Of course, the farmer is going to sell that thing which he can get most out of and is going to plant that thing which he can get most out of. Consequently it is the tendency under such conditions, outside of and apart from patriotic motives, to decrease the production of wheat. Now, can you tell whether the licensing power, if granted, is going to have that effect with reference to these metals?

Mr. GRAY. Certainly it can have that effect. If the power is used in the same way it will have the same effect.

The CHAIRMAN. Is there any metal that can take the place of antimony?

Mr. GRAY. For the purpose of hardening lead and for the purpose of hardening the mixtures for babbitt making, I think there is no substitute.

The CHAIRMAN. Then, if a minimum price were fixed it could not affect any other metal, because there is no other metal that takes the place of antimony.

Mr. GRAY. I think not.

The CHAIRMAN. However, in regard to wheat, when the price was fixed there were other commodities which could be used to take the place of wheat.

Mr. GRAY. Yes, sir.

The CHAIRMAN. As to this bill, do you know of any other commodities that would be affected by fixing the price on any one of the metals mentioned in the bill?

Mr. GRAY. You mean, going out of the range of the antimonial matter?

The CHAIRMAN. Yes.

Mr. GRAY. I am not sufficiently familiar with the situation to say.

The CHAIRMAN. Well, taking antimony alone, would a minimum price on antimony affect the price of any other commodity mentioned in the bill that you know of?

Mr. GRAY. I do not think it would.

Senator JONES. How many concerns engaged in the production of war materials are using antimony?

Mr. GRAY. Every concern making shrapnel must be using antimony. Every concern making spotting shells, too. Some is used for primers. I think the Government is using it for that purpose.

Senator JONES. About how many concerns do you think that would involve?

Mr. GRAY. I do not know.

Senator JONES. Where is it used principally? Is it used principally in the eastern part of the United States?

Mr. GRAY. Yes, sir.

Senator JONES. And the ore would have to come from the western part of the United States?

Mr. GRAY. The metal comes now from not only the western part of the country but from China.

Senator JONES. I understand that. I am speaking of the domestic production. Have you figured what extra burden your plan would put upon the railroads of the country?

Mr. GRAY. It will put no extra burden, because it is now shipped across the continent very largely.

The CHAIRMAN. This importation from China lands in San Francisco and travels by rail?

Mr. GRAY. Yes, sir. There has been Bolivian ore coming directly to eastern ports.

Senator JONES. The reason why they do not ship Chinese ore by an all-water route must be that they do not have but a small quantity in a given cargo.

Mr. GRAY. I do not know the quantity in a given cargo. The total quantity is as I have said. Undoubtedly, as the metal is heavy. antimony is not shipped in in solid cargoes.

Senator JONES. In order to fix a minimum price and to increase domestic production sufficiently to satisfy our demands, we would have to prohibit the introduction of foreign ores and would have to be ready with the check books to pay for the ores in this country as produced.

Mr. GRAY. There are two propositions involved in that. I think, in fact, it would be unwise to prohibit the importation of the metal. Of course, our domestic production can not overnight spring up in sufficient quantity to take care of our needs. A burden, however, should be placed upon the incoming metal in order to equalize the price of the Chinese metal and that of the American metal until the American produced metal is produced in sufficient quantities to supply the needs of the country. On the other hand, naturally, if the stimulation which has been suggested be applied to the industry there would have to be a payment for it, but that payment would not have to be greater than England has been making for it since 1915.

Senator JONES. From what source does England get her supply?

Mr. GRAY. Largely from China. France, I understand, is getting half of her supply from Algerian ores. They are now erecting a plant near Marseilles.

Senator JONES. What rate of tariff would you put on those foreign ores?

Mr. GRAY. The President, under this bill, is given power to investigate the situation with reference to the obligations assumed by the United States. If he makes a price and this price is fixed at 19 or 20 cents and then it becomes apparent from the importation of ore that this country would be assuming a large obligation the President is authorized to ascertain the facts and fix a temporary duty for the purpose of equalizing the difference. Now, in order to intelligently fix that duty he would have to ascertain or approximate the cost of production in China. He may be able to do that. He may miss it the first time. If he does, he may thereafter impose an additional duty in order to equalize the difference. The amount would have to be the difference in the cost between the Chinese produced metal at the point of use and the American produced metal at the point of use.

Senator JONES. Does this concern that is mining ore in Nevada make any money?

Mr. GRAY. No, sir; it is not making money. It is really marking time. It can not make money under present conditions, Senator.

Senator JONES. What is the lowest price at which it can make money?

Mr. GRAY. That is a question of time again. Speaking of what this company has in mind, it is that in the course of time, when it has opened up its property and equipped it, it can compete with the Chinese metal, provided the conditions have not changed comparatively. That, of course, Senator, is a question of time and a question of amortizing the value of the plant that will have been in operation for such a short space of time.

Senator JONES. This concern thinks that, if properly equipped, it can compete with Chinese prewar prices?

Mr. GRAY. Yes. That means if allowed a sufficient time to write off its investment.

Senator JONES. As to these other industries that are prospecting in this country, could they probably do as well?

Mr. GRAY. I have no doubt that there are many prospects in this country that could do as well, Senator.

Senator JONES. Then, if properly equipped, so as to compete with a 9-cent metal, to guarantee a price of 20 cents, would involve a pretty good profit, would it not?

Mr. GRAY. No, Senator, it would probably involve no profit whatever, but probably a loss, if the situation at the end of two years were to go back to the prevailing conditions. If the owner has to equip his plant and write it off in two years, he can hardly make a profit. If he could write it off in 10 ten years, it would be profitable.

Senator JONES. If, in normal times, he can compete with the Chinese product, why should he want to write it off in two years?

Mr. GRAY. After having time to develop his property and after having written off a considerable part of his investment, he then would be in a position to compete. If the price is now fixed, it would be on the basis of writing off a considerable part of the equipment in the two years' period. The producer would then be in a position to compete with the Chinese metals. That, of course, involves a writing off of some of the capital charges during this two-year period.

The CHAIRMAN. You made a remark a few moments ago that if the President finds the importation to this country of antimony is going to enhance the liabilities of the United States, he can from time to time put on tariff duties, so that the industry in the United States would be protected.

Mr. GRAY. I so interpret the bill, Senator. It may be possible that the particular framing or drafting of the bill, as it came from the House, may not give that elasticity which permits the President from time to time to do that.

The CHAIRMAN. That is a point that I wanted to bring out. Under the bill he could ascertain what rate of duty added to the then existing rate of duty, if any, on the chief necessities, and the value of the chief necessities at the time of importation, would be sufficient to bring the price thereof up to the price necessary to protect the home industry. Now, your thought was that in case his action at the first time was not sufficient to protect the industry, he might, at another time, after it had been ascertained that the tariff had not accomplished the object in view, add a higher tariff.

Mr. GRAY. Yes, sir.

The CHAIRMAN. Do you understand that the bill is now so drawn as to allow the President to do that from time to time?

Mr. GRAY. I am a little afraid that the language of the House bill might be so construed as to limit the power of the President to one act, and that after he acted he would have exhausted the powers conferred upon him. I think, however, that the intention was that he should have power to adjust the situation. Take the antimony situation as an example. Mr. Li, we will say, gives his cost as 13 cents. Now, the President may think that he is right, but it may be discovered that Mr. Li was not fully informed, and that the cost was considerably less. It might be that there would have to be one, two, or three steps necessary to equalize the situation.

The CHAIRMAN. Your idea would be to have it so elastic as to meet the condition at any time when, in his opinion, it should be met?

Mr. GRAY. Yes, sir.

Senator JONES. I believe that you stated you did not know what line of ships was bringing this ore from China to the United States?

Mr. GRAY. I think they are Japanese ships.

Senator JONES. You do not know the necessity, if any exists, for conserving that tonnage?

Mr. GRAY. I know that there is a certain amount used, and if it is not used for that purpose, it will be used in some other business.

Senator JONES. Wouldn't this heavy metal make good ballast for a ship?

Mr. GRAY. You mean on the return trip?

Senator JONES. Yes.

Mr. GRAY. It would certainly make a splendid ballast; there is no doubt about that.

Senator JONES. Do you know of any complaint having been made about the tonnage being required that is necessary for this ore?

Mr. GRAY. Not for this particular ore. I know this, that every ton of shipping that can be spared for anything which is not absolutely essential is needed on the Atlantic Ocean, and is needed every day more and more.

Senator JONES. But you do not know enough about the Pacific shipping situation to know whether or not the bringing in of this ore seriously interferes with the war business?

Mr. GRAY. Before you came in, Senator, I think I stated what, in my opinion, the situation was. We are using of this particular ore something like 30,000 tons of space.

Senator JONES. Yes; I heard that.

Mr. GRAY. And that can, of course, be used for something else.

Senator JONES. It may be used, and it may not; in my opinion, the 30,000 tons, distributed among the numerous ships plying across the Pacific may materially affect the situation, and it may not. It seems to me, in the absence of specific knowledge on the subject, I should rather hestitate to make a positive statement that it did interfere with the shipping, or would relieve the situation materially.

Mr. GRAY. Consider this illustration: You have 30,000 tons in all. These boats will run 5,000 tons, probably. It would take six of those boats on one trip, or take one boat of that size six trips, to carry this metal over. Of course, this metal is so heavy that a boat would not be loaded unless it was loaded solidly with this metal. There you have a certain measure of what you might be conserving.

Senator JONES. I can readily understand that it might be done, but I understood you gave it as your impression that these ships were used for transportation of this ore.

Now, I believe you said China was shipping a million and a half pounds a month.

Mr. GRAY. From that to 3,000,000.

Senator JONES. Have you heard of the shippers of ore meeting with difficulties?

Mr. GRAY. No difficulties in the world. They have no difficulty in shipping it. The pinch is on the other side. This country is desirous of getting all the ships it can get.

Senator JONES. Have you enough specific information about the shipping conditions on the Pacific coast to state to us that the boats would be relieved from the Pacific and put on the Atlantic if we produced this antimony in the United States?

Mr. GRAY. I can not answer that question of my own knowledge.

Senator SHAFROTH. Did I understand you to say that this power of licensing should not extend to the right of prohibiting people from buying from the producer at a greater price than the fixed price?

Mr. GRAY. Senator, my opinion on that subject would be of no value, but my person opinion is that you should confer powers large enough to control the situation. You can rely in this time of stress on their being wisely used. I am in favor of granting power enough to meet our needs.

Senator SHAFROTH. Then, if that power is exercised to the extent of fixing a maximum price, would you believe in its being fixed in that way?

Mr. GRAY. I do not believe fixing a maximum price would bring out maximum production. I think it would have the other effect; it would discourage it.

Senator SHAFROTH. Would not the issuance of an order that persons who buy this ore shall not pay any more than the minimum price be equivalent to making it a maximum price?

Mr. GRAY. It would.

Senator SHAFROTH. But do you think that power should exist?

Mr. GRAY. I think, so far as this particular ore is concerned, it is different, because the importation of Chinese metal would take care of that.

Mr. MACBETH. Mr. Chairman, may I ask a few questions?

The CHAIRMAN. Yes.

Mr. MACBETH. Mr. Gray, are you aware that the tariff commission is now looking into the antimony situation and has called a meeting of antimony producers who are to meet in San Francisco in the latter part of June with a view of determining whether or not there shall be a tariff placed on antimony?

Mr. GRAY. I do not know that a call for a meeting has gone out. I do know that the subject is under investigation, and I do know that the Government is engaged, or will be engaged, in surveying the antimony resources.

Mr. MACBETH. If the Tariff Commission should recommend a tariff of 7 cents, wouldn't that meet the antimony situation?

Mr. GRAY. I do not believe it would.

Mr. MACBETH. Are you aware, Mr. Gray, that a very large production of antimony in China and a consequent drop in price has caused a number of the Chinese smelters to shut down?

Mr. GRAY. I am aware of it.

Mr. MACBETH. You did not bring that out. I will state for the information of Mr. Gray and the committee Coeur d'Alene property, in western Idaho, at 20 cents a pound, would give many times the amount of antimony required.

Mr. GRAY. Low-grade or high-grade ore?

Mr. MACBETH. I know of one deposit in the Yellow Pine (?) Basin in Idaho that could fill the Government's needs. There are deposits in western Montana, in the State of Washington, and a number of deposits that are not mentioned by the survey that could easily meet your situation.

Mr. GRAY. Mr. Macbeth, would you be good enough to give me a list of those deposits?

Mr. MACBETH. Antimony is all over the West. Mr. Gray stated correctly when he said the miners run away from stibnite. I know of deposits in that section of the country that could be brought into production under a 20-cent price.

There is another matter that Mr. Gray did not bring out. He referred to clean stibnite, in which there is no arsenic or lead.

Mr. GRAY. It is very hard to find it without arsenic.

Mr. MACBETH. But the other deposits, which carry lead and which the Government is willing to take—in fact, the presence of lead is desired—those deposits are in large numbers throughout the West.

## STATEMENT OF MR. H. R. LAYNG, OF SAN FRANCISCO.

The CHAIRMAN. You may go ahead, Mr. Layng, and state the extent of the deposits of antimony in this country and where they are to be found.

Mr. LAYNG. The deposits of antimony in this country are mostly in the prospect stage. The low price of antimony has not encouraged the miners to devote any attention to the development of these mines.

The high price of 1915 and 1916, rather than encouraging the development of these mines, has caused the mines to be gutted, owing to the thought and the belief of the miners that the price would not remain high any length of time, and that consequently any work they put in on development would be a waste of money. That is the personal belief of miners which I have gathered by personal observation and conversation with them.

There are numerous prospects of antimony throughout California and Nevada and there are numerous prospects of antimony in Washington and Oregon. The latter two States I have not visited personally but have examined a number of reports, some of them by very reputable engineers.

I have visited in California 10 antimony districts and found good indications of extensive ore bodies, although they are undeveloped. In the San Benito district, San Benito County, Cal., there is a prospect upon which considerable money has been spent in development work. This prospect is developed by means of two tunnels running in on the vein. The face of the 100-foot level tunnel strikes the tunnel at about 200 feet below the top of the croppings. The face of what they call the 300-foot level is not in quite as far as the 100-foot level, and that shows ore 300 feet below the croppings.

Senator JONES of New Mexico. How thick is the vein?

Mr. LAYNG. It averages about 20 inches wide. It averages about 15 per cent on the lower workings; on the croppings it averages about 28 per cent. The ore is remarkably pure and free from arsenic and other impurities. This mine has shipped about eight carloads of 40 or 50 per cent ore.

Senator JONES of New Mexico. Is there a concentrating plant?

Mr. LAYNG. Nothing there whatsoever.

Senator JONES of New Mexico. This 40 or 50 per cent ore which was shipped, was that selected?

Mr. LAYNG. That was recovered by hand sorting.

The CHAIRMAN. Do you know the extent of the antimony deposits in Idaho just referred to?

Mr. LAYNG. No. I have had a few reports, but they were not written by people qualified to write a report, and they did not give much information, except that one might gather there was considerable antimony in Idaho.

The CHAIRMAN. You know nothing about the deposits mentioned by Mr. Macbeth?

Mr. LAYNG. I do not.

Mr. MACBETH. You do not know they were operating in Montana and Idaho?

Mr. LAYNG. My source of information is meager on that point. I understand that there was a mill, but I also understand that it is now shut down. Within a radius of 20 miles of Lovelock, Nev., there are numerous prospects of antimony. One of these plants, located about 3 miles from Antelope Springs, has shipped 12 carloads of ore. In the early days there was a smelter on that. That property is not developed. The ore was taken out from the surface. The deepest working was only about 40 feet.

About 1½ miles from this mine is a property which has not been developed. There is a 10-foot cut on it. They started to drive a

tunnel to tap the ore at a depth of 100 feet, but the tunnel lacks about 40 feet to be long enough to strike the ore. This ore showing on the surface is about 20 feet wide, averaging probably 9 or 10 per cent clean, pure ore.

About 8 miles from this prospect there is known what is known as the Sutherland mine, which in the early days was equipped with a reverberatory furnace, making crude, which was shipped to England for refining. This mine had during the prices of 1915 and 1916 produced about 1,500 tons of 25 per cent ore, and a number of cars of high-grade ore. This mine was gutted. No development work has been done during the extraction of the ore. This ore was blocked in the mine. The mine is developed to a depth of 320 feet. The vein averages about 3 feet in width.

I have seen deposits which would average about 3 feet in width and 35 or 40 per cent of ore in places. The indications are that considerable ore could be developed in this mine by further development work. The faces are in ore and the bottom is in ore. A few miles across the mountains from these deposits near a post-office station called Unionville, is a mine whose ores consist principally of oxide. I do not know the production of this mine, but when I visited the mine they were working the dumps with jigs. The mine has probably 1,500 feet of development work done on it. It was a narrow vein, and it was worked in the early days and the ore was shipped to England. This mine is owned by John Ross. I do not know the name of the mine. There is a shaft on the lower level which has ore in it, but the rest of the ore has practically been extracted.

Senator JONES of New Mexico. If you were to make an open bid of 20 cents for all this metal that could be produced in the next two years, how much liability would be incurred?

Mr. LAYNG. I believe it would require two years to get on a production basis of sufficient extent to supply the total production.

Senator JONES of New Mexico. Then it would not do any good.

Mr. LAYNG. Oh, yes; they could probably get 75 per cent before that time.

Senator JONES of New Mexico. You say "probably 75 per cent." On what do you base that?

Mr. LAYNG. That time is based upon the time necessary to equip the mine.

Senator JONES of New Mexico. How many men in the State would it be necessary to employ in that industry during that period of time?

Mr. LAYNG. Well, I haven't any figures on that.

Senator JONES of New Mexico. Do you know to what extent you would take the labor or skill from other industries in order to do this development work?

Mr. LAYNG. Well, I believe in the matter of antimony these prospectors would get in and do a little work.

Senator JONES of New Mexico. If those prospectors were not on that, wouldn't they be working on something else?

Mr. LAYNG. Most all of the prospects are owned by these antimony prospectors, who do nothing on the prospects but the development work that is necessary to hold them.

Senator JONES of New Mexico. About how many prospectors are engaged in that work?

Mr. LAYNG. Senator, they are not totally engaged in the work. They do the necessary assessment work of one month's work in a year. Probably there are two or three hundred prospectors who have connections with antimony prospects.

Senator JONES of New Mexico. It strikes me if you were to make an open bid for antimony for two years at 20 cents a pound you would either get a flood of the ore, or else that would not be a long enough period to get very much, and then you would have a lot of failures on your hands after that time.

Mr. LAYNG. Well, I can not say that, because during the high prices the production increased considerably. They were mining ore right from the surface.

Senator JONES of New Mexico. If they did increase it considerably, they might increase it considerably more than we expect, and we would have quite a contract on our hands.

Mr. LAYNG. It would take some time for the smelter capacity to handle the ore. It would take six or nine months to equip smelters enough to handle the needs.

Senator JONES of New Mexico. Is there idle smelter capacity now?

Mr. LAYNG. Not sufficient to supply the needs.

Senator JONES of New Mexico. Where would this ore be smeltered?

Mr. LAYNG. There is a smelter at Matawan, N. J.; there is one in San Pedro, Cal., and one in San Francisco, and one at south San Francisco, Cal. There is a smelter being erected in Mill City, Nev. There is another smelter some place in the East, but I do not know just where it is.

Senator JONES of New Mexico. You say there is one being erected in Nevada?

Mr. LAYNG. Yes.

Senator JONES of New Mexico. Is that for the purpose of treating this ore?

Mr. LAYNG. It is for the purpose of treating antimony ore.

Senator JONES of New Mexico. Is not the outlook for success rather dark?

Mr. LAYNG. It is, but the man who is putting in the smelter has plenty of money, and I suppose he is more interested in the working out of his theory than in the profits.

Mr. MACBETH. May I say for the information of the committee that it is Mr. Wells, of Denver, Colo., who has been uniformly successful in the development of many mines?

Mr. LAYNG. They have a mine in Bloody Canyon, which is credited with a production of $300,000. In the early days this mine was operated. The ore was being jigged at the time I saw the mine.

The CHAIRMAN. In California?

Mr. LAYNG. No, sir; in Nevada.

Senator JONES. Taking your testimony and that of Mr. Gray, the suggestion seems to be that the Government should incur unlimited liability and one which can not be reasonably estimated, for the purpose of conserving shipping which is of doubtful necessity on the testimony presented. Now, if you people who are interested in this antimony production want legislation upon this subject, it seems to me that you should cover a broader field than you have covered, so as to give us something of a more definite nature to act upon. In the

first place, it is not apparent that that shipping condition on the Pacific coast is in an extreme situation, or that there is any dire necessity for utilizing that shipping for other purposes. In the second place, we have nothing before us to indicate how large a contract we would be taking on our hands if we were to fix a minimum price. I am saying this not only for the benefit of you and Mr. Gray, but for the benefit of others who are interested in this industry.

Dr. MANNING. I have been told by the representatives of the Japanese Government that they are turning over their ships to the United States Government. For example, there is a mission, a Japanese mission, in this country that is looking around to see how they can utilize certain American processes in Japan so as to relieve the shipping situation.

Mr. LAYNG. I think that point can be taken care of by license.

Senator JONES. That would not insure increased production, if that license were a temporary thing and something likely to be revoked at any time.

Mr. LAYNG. I mean to say that if the production should meet the requirements, they could stop issuing new licenses.

Senator JONES. Then you would get away from the idea of making any blanket offer at all, would you not?

Mr. LAYNG. I do not understand that the bill is to make a blanket offer. My understanding is that this was to make an offer according to the location and the mine's ability to produce.

Senator JONES. Your idea is to go to a company and say, "We will take so many tons of metal at a certain price," and see if they could probably produce that amount of metal within the time, and then go to a sufficient number of other concerns and do the same thing?

Mr. LAYNG. Yes.

Senator JONES. How do you suppose these prospectors would feel who have been getting rich in their minds for years, who would not have a contract with the Government. You know a miner is the richest man in the world. He has his heart set on this prospect. You say there are 200 of them. Now, they have been working a month each year to maintain their title to their claims.

Mr. LAYNG. Yes, sir.

Senator JONES. When the Government goes and creates a monopoly with respect to this metal and confines the activities to a few, how do you suppose the others would feel?

Mr. LAYNG. Most of these mines, Senator, are not large enough to support a plant. Consequently, there would not be numerous plants.

Senator JONES of New Mexico. If they were large enough to produce, they could fill the Pacific Ocean. There have been numbers of them. I said the Pacific Ocean; probably I should say the Columbia River or the Potomac River.

Mr. LAYNG. The smallness of the mines would make it necessary for the contractor to draw upon a number of sources for his supply of ore.

Mr. MACBETH. I want to state, for the information of the committee and for the information of Mr. Layng, that I know of a plant controlled by Chicago people on which there is a 200-ton concentrator operating with antimony ore running about 20 or 25 per cent and about 15 per cent lead and 15 ounces of silver. In this same section of the country there are three other mines, the Sawtooth,

the Silver King, and the Columbia. The Columbia is controlled by Philadelphia people operating on a similar scale and the Vienna has a 100-ton concentrator.

The CHAIRMAN. Why don't they save antimony?

Mr. MACBETH. It has not been profitable to do it.

The CHAIRMAN. Is there any reason to believe they will save it?

Mr. MACBETH. There is no reason that I know of.

The CHAIRMAN. What would you do to get that price?

Mr. MACBETH. The gentleman suggested 20 cents; we are all agreeable to that, undoubtedly. It is one of the few things we have a chance to cut this melon on.

The CHAIRMAN. What melon?

Mr. MACBETH. This $50,000,000.

The CHAIRMAN. Where do you stand with reference to that $50,000,000?

Mr. MACBETH. We hope we may get some of it into the West.

The CHAIRMAN. In what way is it to be operated?

Mr. MACBETH. That will be in the hands of the administrator largely.

The CHAIRMAN. Do you believe it is going to be wasted, or is it coming back to the Government?

Mr. MACBETH. Yes.

The CHAIRMAN. In other words, if the Government buys $20,000,000 worth of antimony and distributes it to the trade or the industry, that money will come back from the trade into the fund, and then they can buy more when needed?

Mr. MACBETH. That is the melon.

The CHAIRMAN. I always understood "melon" in a different way.

Mr. LAYNG. I may state that the trade demands antimony which runs over 99 per cent pure. It is almost impossible to separate the lead from the antimony.

Mr. MUDD. In the purchase of high-grade antimony ores the lead limit and the arsenic limit are placed at 1 per cent. In other words, high-grade ore is refused by buyers if the total lead plus arsenic is more than 1 per cent. That limit is placed so that they will make metal which will meet trade specifications. The Idaho ore is inclined to be a little leady. The large deposits of Idaho ore would not be able to meet the specifications.

Mr. MACBETH. I want to say that one of the representatives of the War Industries Board came to me and asked me the other day if I could designate a price which would result in bringing out the antimony ores containing lead.

Mr. MUDD. The Government requirements for antimony ore of that character are not large.

Senator JONES of New Mexico. How large are they?

Mr. MUDD. My impression is that at the present time they do not exceed a few hundred tons a month for shrapnel only. That does not include the antimony used by the Fleet Corporation, the Shipping Board, and so on.

Senator JONES of New Mexico. I understand. I mean this combination of antimony and lead.

Mr. MUDD. It is largely for the use of shrapnel. It is 12½ per cent antimony and 87½ per cent lead. The requirements of the Govern-

ment in the manufacture of shrapnel, to the best of my knowledge, do not exceed several hundred tons a month. It is not a large percentage of the total antimony consumption. I think what Mr. Macbeth stated about the stability of price is pertinent.

The CHAIRMAN. If there are no further questions we will adjourn at this time until Monday morning at 10 o'clock.

(Thereupon, at 12 o'clock m., the committee adjourned until Monday, May 20, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

**MONDAY, MAY 20, 1918.**

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met at 10 o'clock a. m., Senator Charles B. Henderson (chairman) presiding.

Present: Senators Shafroth and Jones of New Mexico.

Also: Dr. Van. H. Manning, Director of the Bureau of Mines; Hon. George Otis Smith, Director of the Geological Survey; Mr. A. G. White, mine economist, Bureau of Mines; and Mr. H. S. Mudd, mineral technologist.

The CHAIRMAN. The committee will come to order. Mr. Taylor, the committee will be glad to hear from you.

## STATEMENT OF MR. GEORGE M. TAYLOR, COLORADO SPRINGS, COLO.

You may state your name, residence, and occupation.

Mr. TAYLOR. My name is George M. Taylor; my residence Colorado Springs, Colo.; I am manager of the milling department of the Portland Gold Mining Co.; also president of the Colorado Metal Miners' Association, and I would like to state that this association is composed of the mine owners, the miners, and the prospectors of the State of Colorado. It has a membership of some five or six thousand, and for every mine owner there are some 30 or 40 miners and prospectors, and it is for the miner, the producer, and the prospector that I wish to speak.

The CHAIRMAN. How long have you been connected with this association?

Mr. TAYLOR. I was one of the organizers of it seven years ago. I have been president of it for three years, I think.

The CHAIRMAN. And what are the objects and purposes of the organization?

Mr. TAYLOR. To look after the interests of the mine owner and also the miner in every way pertaining to mining.

Now, Mr. Chairman, with reference to this bill I have read the House bill and I have read the confidential bill No. 3, I think. Of the two bills I prefer the confidential bill, or the Henderson bill, or whatever it is called, for the reason that that bill will give more latitude if it is passed. I think the Government should be allowed to buy and sell metals, if the idea is to increase the production of those metals mentioned. I do not think that you can take any one

metal and single it out to-day and pass a hard and fast rule for it which would apply three months or six months from now or a year from now, the conditions change so rapidly, and I think that there should be considerable leeway allowed in the bill. I think that the man who administers it should have considerable authority and it should be only one man and not a commission—one man who can be held responsible.

The miner of the West will be perfectly satisfied with any man whom President Wilson appoints to administer this bill. The miner of the West has all kinds of confidence in President Wilson and any appointee that he would make.

Now, I have heard a number of these hearings that have been held here. I have heard the representatives of the smelters and the big steel corporations and they have all testified that the bill is unnecessary. I think that testimony was to be expected from those men. They are the consumers; they are the big operators, and in all the legislation we have had in recent years, they have opposed any restrictions being put upon them. I think that is the natural feeling that everyone has, and especially big business; but I do not think it is to the interest of the miner of the West, and I do not think it is to the interest of the Government not to pass a bill like this if they want these metals mentioned.

I would say with reference to the testimony of Mr. Kelley, of the Anaconda Copper Mining Co., that he cast a slur without any cause for it on the prospector and miner of the West. As I recall, he stated that the miner was the most hopeful man in the world, and that there was not one of them from Alaska to Terra del Fuego that had a mine. That was uncalled for; it is not true, and it is a slur upon the miner and prospector of the West. I wish to refute it. Who found the mine at Butte? It was the hopeful man. Who found all the other mines of the West? It was the hopeful man. It was the man, who goes out on his burro and drinks alkali water and does a lot of hard work in the sun and in the snow as well. He is the man who found the mine. Now, as to manganese, as far as I know, there is not very much manganese of high grade in the State of Colorado. A short time ago a miner, from up near Lake City, shipped a carload of manganese into Denver. It was a sample and it was sold to a broker. There was over 40 tons in the car and the manganese ran something over 40 per cent. The man was broke. He did not have any money; the grocery man held him up while he dug it, and he borrowed his car fare to come to Denver to sell it. I understand he sold it to a broker who represents one of these steel corporations. They offered him at first, I think, $700 for the car. It was a sample. He thought it was worth more than that, although he knew very little about it, and he went to a friend who told him it was worth considerably more. After considerable dickering, they gave him $700 for the car. The people went around afterwards selling it at about 60 per cent on what it was worth. He told a friend of mine—I do not know the man, I did not see him—that he could get a car a week of that high-grade manganese out; but he did not feel like digging it out and letting the broker make all the money on it.

Now, I feel if you want to encourage the manganese production from the men in the West that you ought to bring them into some kind of close contact with a Government agent. The little man is just as

patriotic as the big steel corporation or the smelter is. In fact, Colorado went "over the top," while the locality in which the steel industries were located had not gotten started. If you want to measure it by money, the big operator knows what is going on here in Washington. He is in full touch with the different war boards. The little man in the West knows nothing about it, or if he does he reads about it in the weekly paper a few weeks after it has happened. The little fellow does not feel that he is getting recognition. If you want manganese or if you want tungsten or fluorspar, if you want potash, if you want molybdenum or pyrites—all of which they have—they would like to meet somebody who is in authority, somebody who represents the Government, and if he has got some of the metal that you want he will go up there on the hill and will say, "We have to have this to win the war; we have got to lick the Kaiser," and all his friends will join with him to mine it and help to get it out.

Now, I do not think that the big corporation that wants to buy this manganese direct and eliminate any Government agency comes in contact with the little man in the proper way. He comes in contact with him just like the broker in Denver came in contact with the man in Spainero, and I believe that if you have a close contact you can increase your production considerably.

Now, as to tungsten; in our State it is produced in Boulder County, principally. That has been the largest single place where tungsten ore has been produced, I judge, in this country. They have been producing the ore for a long time; they have dug out the best tungsten that they had. Some of their mines are deep, and they have to pump, and what is left is low grade, which is expensive to mine, and the miners up there, whom I know—I know a number of them—tell me that they can not produce tungsten at the present price.

Senator SHAFROTH. What is the present price?

Mr. TAYLOR. I think they get $22 to $24 a unit for it.

Senator SHAFROTH. A unit is 20 pounds, is it?

Mr. TAYLOR. Yes, sir; 20 pounds. Now, to produce a unit a lot of that ore runs one-half of 1 per cent; that is 10 pounds. They mine that and concentrate it and probably save 80 per cent; that is, they save 8 pounds out of 10. By the time they get a ton of that they have mined a great many tons, and the expense of hauling it to their mill and crushing it and concentrating it they claim it does not pay at that price to them. The high-grade veins are very narrow streaks like my finger, and alongside of it is this one-half per cent tungsten. If they can mine the entire streak and concentrate it, they could get the full efficiency and leave that low grade in the ground which can be worked later.

Senator SHAFROTH. How many pounds do they get out of a ton?

Mr. TAYLOR. They get about 8 pounds out of a ton of that low grade. They save 8 pounds.

Senator SHAFROTH. How do they concentrate it; do they do like they do in gold ore, crush it?

Mr. TAYLOR. Yes, sir; they put it on a table and crush it.

Senator SHAFROTH. The same method?

Mr. TAYLOR. Yes; and then it is run by water gravity over concentrating tables. That has to run 60 per cent in order to sell it; that is, they have to have 1,200 pounds in 2,000 of tungsten.

Now, as to the tungsten in Colorado. I do not know how much you want. I do not know how much Colorado could produce. I do not think we could produce what is admitted from the testimony that I have heard here.

Senator SHAFROTH. How much is it producing now?

Mr. TAYLOR. That I do not know, but very little. It is nothing like it was two years ago, when the price was higher. A good many of the mines have closed altogether.

Senator SHAFROTH. How many mines in the Boulder district are the highest number that ever operated?

Mr. TAYLOR. I should say at one time there were 300 mines, two years ago, in the Boulder district producing tungsten.

Senator SHAFROTH. How many mills are there?

Mr. TAYLOR. About 10 or 12, I could not say positively.

Senator SHAFROTH. How many mines are being operated now in Boulder?

Mr. TAYLOR. About four or five mines at the present time.

Senator SHAFROTH. Are they mining the deep mining?

Mr. TAYLOR. Down to 700 feet in one of the properties.

Senator SHAFROTH. Now, what do you say, Mr. Taylor, as to the fixing of a minimum price, and at what amount, in your judgment, should the minimum price be fixed at?

Mr. TAYLOR. I should answer that in this way: If you want tungsten or any of these other metals, and want a certain quantity and want it quickly—which I understand is the purpose of this bill—I would go to Colorado and I would find out how many tons they can produce within a given time where you want it, and the price at which they can produce it; that is, a fair price. I would then go to every other State that produces tungsten, and every camp that produces tungsten—there are not many of them, you can count them on your fingers of one hand—and find where I could get the higher-grade tungsten produced and the price that each could get. I would then have each camp ship its production to a central point and distribute it there to the steel makers, average the price to them, paying each man a price at which he can make a fair profit. That is what a business man does when he wants to buy something in the market.

Senator SHAFROTH. You would then make the Government the direct purchaser?

Mr. TAYLOR. I would make the Government the direct purchaser.

Senator SHAFROTH. And sell at the average of the amount that the Government has paid to the steel companies?

Mr. TAYLOR. Yes, sir.

Senator SHAFROTH. Then you would not fix a minimum price at all, or any price whatever?

Mr. TAYLOR. I think you would get into trouble when you did that, unless there was a necessity to have it for a limited time. If you did it for a long time you would get into trouble, as you did in the matter of fixing the prices before, and, if possible, I would keep away from it.

Senator JONES of New Mexico. The Government has tried, or is trying, I should say, to handle the labor situation of the country by ascertaining where the labor is and where it is needed. I wonder

how much good that would do if the Government would enter upon an analogous scheme with reference to these metals—find out where they could be obtained and where they are needed, and ascertain what would be a proper price; or, in other words, furnish the producers and consumers with information—how much good that would do by itself if the Government went no further?

Mr. TAYLOR. I think that would help. I think that would be a long step in the direction that I have tried to indicate. The little fellow out West does not know what you want, and he is not in contact with anybody that does. If he came in direct contact with a man who represents the Government, if this is his part of it, of course, he will take an interest in it.

Senator SHAFROTH. And he would feel that he was not being fleeced.

Mr. TAYLOR. He would feel that he would not be fleeced.

Senator JONES of New Mexico. To undertake to buy all of these various ores mentioned in this bill at different prices, in accordance with the cost of production plus reasonable profit, and to allocate those ores at an average price would be a very large undertaking, would it not?

Mr. TAYLOR. It would, if there were a great many producers, yes, sir; and as there have got to be more producers—which there would be in that case—it would become a much bigger job. But that would be a way to encourage production. I do not know how badly you want that.

Senator JONES of New Mexico. You mean that that would be one way.

Mr. TAYLOR. That would be one way; yes, sir.

Senator JONES of New Mexico. I can see how, if we conclude to go into that business generally, that would probably do the job as expeditiously as any other, but it must be recognized that that would be an enormous undertaking to do that with manganese and chrome and fluorspar and pyrite and tungsten and all those other metals mentioned in this bill.

Senator SHAFROTH. But, Senator, would it be much of an undertaking when you consider that the Government would immediately sell and get back this money?

Senator JONES of New Mexico. Well, I think it would be a pretty good job for any concern to buy all the manganese that is handled in this country—seven or eight or nine hundred thousand tons.

Mr. TAYLOR. A man to do that would have to do nothing else. He would have to have a corps of assistants under him. Of course in the State of Colorado there is a mining inspector who could be utilized without any cost to the Government, and he has four assistants around in the State who could be used and who would furnish a good deal of information. But he has never been asked to do it, as far as I know, and I have talked to him about it. He says he knows we want manganese but they have never asked him to do anything systematically toward getting it or any other metals.

Now, Mr. Chairman, I should like to speak about potash. Potash has not been mentioned here as far as I know. There is enough potash in the State of Colorado to supply all the needs of the United States for years to come. There is enough potash in Colorado and in

Wyoming and sister States to supply the world with potash for the next 100 years.

Senator SHAFROTH. Where is that located?

Mr. TAYLOR. Potash occurs, and feldspar runs in Cripple Creek. The ore averages 7.6 per cent potash; that is, more than 50 pounds of potash to every ton of ore. At Colorado Springs, where the gold mills were in the early days, there is over 6,000,000 tons of tailings piled that contain over a billion pounds of potash, and the extraction of that potash is the question of taking it out of the silicate rock, which can be done in a number of ways. It never has been done for the reason that they could not compete with the German product coming into this country.

Now, I am from Cripple Creek; our mines are there, and our mills are run there. We run 2,000 tons every day in Cripple Creek. Our mill at Colorado Springs is closed down because the gold has depreciated so that we can not run it any more. We have a mill that cost us three-quarters of a million dollars standing idle. We have everything in that mill necessary to run it except the Cottrell system of condensation and precipitation; a furnace to roast this ore, and the necessary flux are right alongside of us. We have spent a good many thousand dollars in experimenting on this potash and endeavoring to get it out. We have found we can get it out. The furnace we have is a small one; it only treats a few hundred pounds a day, and our problem is the development of large practicable furnaces to do the pioneer work in that kind of pioneer furnace. That is going to cost somewhere from $25,000 to $30,000. The first one may be successful, and then again we may build four or five. It is one of the things you can not tell about until you do it. The installation of the Cottrell equipment, which would cost in the neighborhood, as far as I know, of $100,000, will enable us to sell potash at the present price and make money.

Senator SHAFROTH. What is the present price?

Mr. TAYLOR. I understand the sulphate runs as high as $400 a ton for 80 per cent sulphate of potash. I do not know whether anybody is making any as high as that or not. The work that we have done, and the reason that we have got as far along as we have, has been due to the encouragement that we have received from Dr. Manning and the Geological Survey. I will say most emphatically that if it had not been for Dr. Manning we would have quit long ago. He has sent a man to us to consult with us and advise us and give us some very valuable advice, which has helped us in our work. The work of Mr. Gale and his writings are the finest that have ever been produced on potash, in our opinion, or the finest we have ever gotten hold of. Now we are anxious to go ahead and work that potash out.

Senator SHAFROTH. You mean the dump at Colorado Springs?

Mr. TAYLOR. To work the dump at Colorado Springs; yes.

Senator SHAFROTH. At what cost can you work those dumps?

Mr. TAYLOR. Oh, I judge it would cost us between $85 and $100 to make a ton of potash, as near as I can tell you to-day.

Senator SHAFROTH. It ought to be a good profit if it were selling at $400 a ton?

Mr. TAYLOR. The potash that we will get at that price is selling at about $140. We may be able to do that in six months, or it may take

a year or two. We have not been able to raise a good deal of capital to go into it, because I do not know how long that price is going to last.

Senator SHAFROTH. How long would you suggest that a price, if any is fixed or guaranteed, should be made to run?

Mr. TAYLOR. I would not specify any time. If this war lasts long enough, we will get out; and we do not want anything from the United States Government if the price stays up long enough.

Senator SHAFROTH. But suppose the war should close to-morrow?

Mr. TAYLOR. Then we would simply quit; that is all.

Senator SHAFROTH. But you have your ores mined and on the dump, while other people have not got their ores mined, and they do not want to put up a mill and start in to operating without some kind of a guaranty as to the length of time. Would it not be better, according to your theory, in making a contract for, say, 100,000 tons, to limit it in quantity and then let the man figure out whether he can afford to open up his mine for 100,000 tons?

Mr. TAYLOR. Yes; that would be all right.

Senator SHAFROTH. That would not put the Government to such an enormous expense, paying that same price for potash after the war closes?

Mr. TAYLOR. That is it exactly. I do not think the Government should do that. I do not think you should put a high price on potash after the war is over and make the farmer pay it. I think we ought to try and get potash down to a reasonable price. As I understand it, potash sold before the war at about $40.

Senator JONES of New Mexico. What grade?

Mr. TAYLOR. About 40 per cent potash.

Senator JONES of New Mexico. Such as you are trying to make?

Mr. TAYLOR. That is what we were making at first. To make a higher grade potash you have to give it re-treatment. That is, you have to dissolve it in water and crystallize it and get a percentage of potash. But the majority of potash, as I understand, that was sent in from Germany ran 30 to 40 per cent, and we would endeavor to make a similar potash because that is what the farmers have been accustomed to use. If we can get started and make a potash and can make it for $85 to $100, I think in a year's time we will cut that in half. We have on everything else that we have ever started, and we have done a lot of metallurgical work. We are mining to-day in Cripple Creek $2 ore and milling it and making a profit at 20 cents a ton.

The first ore that went out of Cripple Creek 20 years ago cost us $18 to have it treated in the smelter. We have got the same set of metallurgists working on potash as we had working on the gold-metallurgical problem and we believe we can beat the game. But I am up against this proposition; I go to my people for money and they are afraid the war is going to end too soon and are afraid they are going to lose it. They want some kind of guaranty that they will have a sale for their product and get their money back or get a part of it.

Senator SHAFROTH. What is the reason your mill has closed down now?

Mr. TAYLOR. Because gold has depreciated and we can not afford to mine it.

Senator SHAFROTH. Is it a smelter proposition or a cyanide?

Mr. TAYLOR. It is a cyanide.

Senator SHAFROTH. Is it not due to the increased cost of cyanide?

Mr. TAYLOR. Cyanide has increased from 16 cents to 32 cents a pound, and it has not been particularly that increase, although that is one of the causes that applies to everything we use. Our supplies have increased 64 per cent, our labor about 35 per cent, and it makes the mining of deep-gold ores unprofitable.

Senator SHAFROTH. Where are those gold ores now smelted or refined or produced?

Mr. TAYLOR. What is being mined—and there is very little being mined comparatively—is being smelted at Golden Cycle Mill, at Colorado Springs. There are two mills there and they were doing the work of the one mill.

Senator SHAFROTH. The same company owns them?

Mr. TAYLOR. No, sir.

Senator SHAFROTH. Where else is this great quantity of potash?

Mr. TAYLOR. In the Leucite Hills of Wyoming.

Senator SHAFROTH. What part of Wyoming is that?

Mr. GEORGE OTIS SMITH. It is in the southwestern part.

Senator SHAFROTH. Is it near the railroad?

Mr. SMITH. It is north of Rock Springs.

Senator SHAFROTH. How far?

Mr. SMITH. The railroad comes nearer than that; about 25 miles, I think.

Mr. TAYLOR. The railroad touches one end of it, I think.

Mr. SMITH. Yes; the branch line.

Senator SHAFROTH. How rich is the ore?

Mr. SMITH. Leucite ore runs about 10 per cent.

Senator SHAFROTH. And that is considered good paying ore?

Mr. SMITH. It has not been proven as yet, Senator. The potash is in it and the question is to get it out. There are companies working on that problem. I suppose the Bureau of Mines is in closer touch with the matter and knows the success that they are having.

Mr. TAYLOR. I understand that this work on potash is all pioneer work. After it has been worked out your furnaces and your fluxes are all determined just the same as they have in steel or gold or copper after two years' work. It was very easy then for another man to come along and build another mill and extract his potash if the first man could do it commercially. That work is very expensive to do.

Senator SHAFROTH. Is this tungsten ore found in fissure veins?

Mr. TAYLOR. They claim in Boulder one or two fissure veins, but whether that is true or not I do not know.

Senator SHAFROTH. Does other quantities of it come in what are called pockets?

Mr. TAYLOR. There is some found in pockets, but quite large quantities are found in veins. I do not know whether they are fissure or not. They are veins 6 to 8 feet wide, but very low grade—one-half of 1 per cent. As I understand it, that is where the big quantity has got to come from in Boulder now of that particular low grade.

Senator SHAFROTH. I have received a good many communications from people in Colorado to the effect that tungsten ore can not be

mined at a profit at the present price. What is your opinion as to that?

Mr. TAYLOR. In a pocket?

Senator SHAFORTH. No; it is claimed that it can not be mined at the present price of tungsten.

Mr. TAYLOR. I think that is true; it can not.

Senator SHAFROTH. At what price do you think they could produce it and have a reasonable profit?

Mr. TAYLOR. Thirty dollars is what they tell me, the miners up there. I say this because there are a number of men who work for me at times who own tungsten properties in Boulder County. They are working with me now because they can not mine the tungsten. They say it does not pay at $22 to $24 a unit, but if they could get $30 a unit they would go back and work for themselves and could make some money.

Senator SHAFROTH. Then, Mr. Taylor, it would be your opinion that this amount that is appropriated in this bill should be increased to probably $50,000,000, would it not?

Mr. TAYLOR. Yes; I think it would take more money than $10,000,000 to carry the business on as I have suggested. I would not say that it would take $50,000,000, but it might.

Senator SHAFROTH. Of course that would be a revolving fund.

Mr. TAYLOR. It would be a revolving fund.

Senator SHAFROTH. Which could be utilized over and over again?

Mr. TAYLOR. The Government would not lose any money on it; it would all come back to them. It would eliminate the broker, and would make the Government the middleman.

Senator SHAFROTH. Do you take it that under the Henderson bill these purchases could be made direct by the Government?

Mr. TAYLOR. I am not familiar enough with the bill to say as to that. While I have read the bill, I do not know as to that. If not, I would make the bill that way.

Senator SHAFROTH. Your suggestion strikes me as a very proper one, to limit the amount which the Government would be responsible for, and inasmuch as these ores are fluctuating violently up and down, it does seem to me the safer proposition for the Government is to buy instead of to make a blanket guaranty for all ores a mine could produce for, say two years.

Mr. TAYLOR. It would bankrupt the Government if it should do that.

Senator SHAFROTH. Well, none of us want to do that. We want to get production and get a reasonable amount, and we want to dispense with profiteering. Of course, we want a large production. Now, if the authority is given to the Government for the purchase of these various ores in quantities sufficient to meet the demands that the Government has, would there be any necessity for a licensing system or for fixing a maximum price?

Mr. TAYLOR. I do not think that either would be necessary, but I would leave it to the judgment of the man who is appointed, that for any one particular mineral he could license—and if he could do better for the Government by licensing to let him do it, or there might be a case in respect to some particular mineral where he could fix a minimum price for a short space of time and it would be an

advantage. I think that is something with regard to which you have to use your judgment in each particular case at the time it arises, and you want some good, big, broad-minded man, who has forgotten that the United States stops when you get to the Mississippi River, to administer it.

Senator SHAFROTH. Mr. Taylor, can you tell me about the amount of tungsten, for instance, that is needed for the Government per annum during this war period?

Mr. TAYLOR. No; I do not know that.

Senator SHAFROTH. Do you think there is enough of the tungsten ore to supply all the demands?

Mr. TAYLOR. Decidedly; I do not think there is any question about that at all. There are a good many States that have tungsten. There are lots of tungsten in other parts of Colorado outside of Bowlder. Up in Pitkin County there are lots of it. It has not been developed.

Senator SHAFROTH. Do you mean at Aspen?

Mr. TAYLOR. Yes, sir; somewhere in there. I do not know exactly where it is, but I know the parties who own it. The western States have all kinds of tungsten. Some of it is away from the railroad and it does not pay to get it out at the present price of hauling it in.

Senator SHAFROTH. And it does not pay to build a railroad up there?

Mr. TAYLOR. It does not pay to build a railroad.

Senator SHAFROTH. Do you think that in the West there are sufficient tungsten mines with which contracts could be made by the Government for the purchase of a sufficient tonnage?

Mr. TAYLOR. I do from the evidence that has been given here by the tungsten men before this committee; yes, sir.

Senator SHAFROTH. What do you know of molybdenum, and where it is produced?

Mr. TAYLOR. In the State of Colorado there have been three molybdenum mills built within the last year, one of 500 tons at Climax, 14 miles from Leadville, and one of 350 tons somewhere in that vicinity.

Senator SHAFROTH. Are they operating?

Mr. TAYLOR. I do not know whether all three of them are or not. I know one is—the one at Climax is operating. There are two at Climax and both are operating, and they are making lots of molybdenum. It is a low grade proposition. They get about 12 pounds of molybdenum out of every ton of ore refined. They have a whole hill of it—a mountain of it.

Senator SHAFROTH. Is it a steam shovel proposition?

Mr. TAYLOR. I understand so, although I do not know whether they are using the steam shovel on it. Those people went in and built a mill and spent a lot of money with no guaranty of price of tonnage, and the market was overstocked and they could not sell it, and they are going to lose a lot of money in all probability.

Senator SHAFROTH. You mean that there is a greater quantity of molybdenum in the supply than is needed?

Mr. TAYLOR. The manager of that property told me this month that he had three carloads back East and could not find a market for it. He did not know what he was going to do with it.

Mr. MOORE. Mr. Chairman, it is possible that I may throw a little light upon that subject. Up to two or three months ago the demand

for molybdenum from our allies was very strong; they needed it for certain war purposes—making molybdenum steel for war purposes. There was such a strong demand that the Bureau of Mines and Geological Survey encouraged in every way possible the production of molybdenum in this country, and these two mills that Mr. Taylor has spoken of were built within a few months, after which a good deal of the demand from the allies very largely ceased.

Senator SHAFROTH. Why?

Mr. MOORE. I can not tell you as to that. We are trying to find out right now. In fact, we have an investigation going on in your department, Mr. Smith, to find that out. But I think they will get back into the market again. I believe it is only temporary. At the present time the United States Government is not using molybdenum at all.

Mr. MACBETH. I would like to invite your attention to the fact that there were only about 15 to 20 tons of the metal required.

Mr. MOORE. That is a mistake.

Mr. MACBETH. That is your statement here. [Indicating a paper.]

Mr. MOORE. It may be for domestic consumption, but not the allies.

Senator SHAFROTH. How many tons did you say were required?

Mr. MACBETH. Fifteen to twenty tons, according to the statement of this gentleman.

Senator SHAFROTH. Of what?

Mr. MACBETH. Of the metal.

The CHAIRMAN. For all uses?

Mr. MOORE. For domestic use. As I have suggested, the United States Government is not using it at the present time.

Senator SHAFROTH. I do not see, if that is the case, that there is much necessity for increasing the production of that industry.

Mr. MACBETH. The statement is made that the use in this country was small—about 15 to 20 tons—and that could be attended to in one of the Western States very easily.

The CHAIRMAN. How much do we export?

Mr. GEORGE OTIS SMITH. Mr. Chairman, suppose I read the statement?

The CHAIRMAN. I wish you would.

Mr. SMITH (reading)—

> The use is small. About 15 to 20 tons of metal per year for making chemicals for the determination of phosphorus in steel and possibly 10 to 20 tons are used in steel and steelite making, but most of the molybdenum goes to Europe to be used as a substitute for part of the tungsten in high-speed tool steels. These uses have an important bearing upon the war, because all apply to the steel trade. In France some molybdenum is used in making breechblocks for cannons.

Mr. MACBETH. It will take 40 tons altogether, if you put it that way.

Mr. MOORE. It is very much larger than that.

Mr. SMITH. That was domestic. The production in 1917 was 175 short tons of metal in ore and concentrates.

Senator SHAFROTH. Is it not true, Doctor, that molybdenum is a stronger and better metal for hardening steel than tungsten?

Mr. MOORE. The use of molybdenum at the present time in steel is not very well understood especially in this country. The allies have

been using it and we have been experimenting with it, but we feel that we have not gotten all the data that is required—even steel people, as to what it can be used for, and what it is best to use it for, and for that very reason we are making inquiries at the present time from the allies in Europe as to just what can be done with it. If that information demonstrates that it is coming back and convinces the steel people of the demand for molybdenum, the increased production may not be equal to the demand. In other words, as Mr. Taylor has said, there may be a very strong variation in one or two months, and therefore this wide latitude of control is absolutely necessary.

Senator SHAFROTH. Are these metals near what is called the Kokomo district?

Mr. TAYLOR. Yes, sir.

Senator SHAFROTH. I have read of that quite a good deal and know that there is quite a considerable production of manganese up there. Dr. Manning, I wish you would, before you get on the stand, examine closely into this suggestion made by Mr. Taylor about buying the ores and try to make an estimate, if you can, as to how much it is going to take. It strikes me that it is quite a safeguard against an invasion of the Treasury, and yet at the same time does not mislead the miner. He can ask for a specific amount and have some assurance that he can comply with his contract. But the blanket minimum or blanket maximum price fixing is something that is pretty nearly intolerable, because it applies to everybody.

Mr. MACBETH. That is being done to-day.

Senator SHAFROTH. What?

Mr. MACBETH. By our several boards—purchasing the metal required every day. That is being done by several boards that require this metal.

Senator SHAFROTH. And then do they allocate it?

Mr. MACBETH. Yes; I should say so.

Senator SHAFROTH. But the Government is not buying it?

Mr. MACBETH. The Government is buying it; yes, sir. Recently, Admiral McGowan, who has charge of the purchases for the Navy Department bought at Singapore a large quantity of tin for the Government at $20,000 below the price at which he could have purchased that tin in the United States. That information was sent to me by a western man. It was contained in a western newspaper. But we have no knowledge of it here.

Senator SHAFROTH. I can see very easily how contracts could be made for the Navy or the Army direct and yet the quantity of ore that is needed or the metal that is needed for the outside consumption was not taken into consideration, and the question with regard to it is whether it could be controlled at a fair price.

Mr. MOORE. I would like to ask Mr. Macbeth if the Government is buying antimony ores, tungsten ores, chrome ores, and tungsten concentrates?

Mr. MACBETH. No.

The CHAIRMAN. I would suggest that it is not advisable to get off the subject in hand. Mr. Macbeth will take the stand later, and he may be asked any questions that anyone desires. I think the introduction of this matter is prolonging the hearing. What we

want is the facts, and Mr. Taylor is now making his statement. I will ask you, Mr. Taylor, if you are in a hurry to leave the city?

Mr. TAYLOR. No, sir.

The CHAIRMAN. Mr. Grasselli is present and we will ask you, if it will not inconvince you, to suspend that he may take the stand.

Mr. GEORGE OTIS SMITH. Mr. Chairman, there is just one question that I think ought to be asked Mr. Taylor, and Mr. Moore will ask it.

The CHAIRMAN. Very well.

Mr. MOORE. It is a question of the amount of material which Mr. Taylor has on hand in Cripple Creek district. Mr. Taylor, you have there a good many million tons, both at Colorado City and at Cripple Creek, already mined and ground, and practically ready for treatment in potash, have you not?

Mr. TAYLOR. Yes, sir; we have at Colorado Springs about 6,000,000 tons ready for treatment, and in the Cripple Creek district there are about 3,000,000 tons ready for treatment, and there are 3,000 tons a day being ground which could be used.

Mr. MOORE. Do you know the total amount of potash required in this country for domestic purposes?

Mr. TAYLOR. The imports, I think, show something like 800 tons the year before the war that ran from 12 to 40 per cent.

Mr. MOORE. Something over 200,000 tons?

Mr. TAYLOR. Of $K_2O$.

Mr. MOORE. Do you know how much is being produced at the present time domestically?

Mr. TAYLOR. I think there is very little produced outside of the lake. It is practically negligible as far as I know.

Mr. MOORE. I think it is approximately, this year, somewhere near 50 per cent of our requirements, which it has taken about four years to reach. Therefore, in four years, we have only reached about 50 per cent of our requirements. Under these conditions you would not think there would be any dangerous change in the market in the following three years, would you.

Mr. TAYLOR. Decidedly not.

Mr. MOORE. I mean in regard to the 50 per cent production this year, not last year. It is hoped we will reach 50 per cent.

The CHAIRMAN. In 1918?

Mr. MOORE. Yes.

(Mr. Taylor was here temporarily excused.)

## STATEMENT OF MR. E. R. GRASSELLI, GRASSELLI CHEMICAL CO., CLEVELAND, OHIO.

The CHAIRMAN. Mr. Grasselli, how long have you been connected with this business?

Mr. GRASSELLI. Ever since I have been in business.

The CHAIRMAN. How long is that?

Mr. GRASSELLI. Twenty-seven or twenty-eight years.

The CHAIRMAN. What business is your company engaged in?

Mr. GRASSELLI. The manufacture of heavy chemicals.

The CHAIRMAN. What ores, if you know, that are mentioned in this bill are used in the manufacture of those chemicals?

Mr. GRASSELLI. The principal ores are sulphur-bearing ores, such as pyrites, and also brimstone.

The CHAIRMAN. What, if anything, was done by you and the other companies engaged in a similar business at or shortly after the outbreak of the war?

Mr. GRASSELLI. Shortly after the war abroad started, when Frank Scott came here as chairman of the Council of National Defense, in order to get together the chemical industries of the country a subcommittee of the Council of National Defense was formed as an advisory committee known as the chemical committee, and which was subdivided into several committees, such as committee on acids (sulphuric and nitric acid), pyrites, sulphur, etc. After the War Industries Board came into operation they wanted to continue to work with this organization (the chemical committee) and could not do it in its then existing form, and the result of that was that the chemical committee was then incorporated into what is now known as the Chemical Alliance (Inc.).

The CHAIRMAN. When was that?

Mr. GRASSELLI. That was after we got into the war; when the War Industries Board was organized, or just shortly after that. Mr. Baruch wanted to continue the organization of the chemical committee. Therefore, it was incorporated as the Chemical Alliance (Inc.) It is not an association for profit, nor is there any stock. It is simply to give them a standing. That organization they continued practically on the same conditions. But I desire to deal only with this question that you have before you now.

The CHAIRMAN. What were the objects and purposes of this organization? What did you intend to accomplish?

Mr. GRASSELLI. The object was to try and provide what chemicals were required and in the quantities that might be needed. Now, we will take the acid section, for example. I was chairman of that in the old organization, but on account of other work that came along I gave that up, and Mr. Huntington, of Baltimore, is now chairman of the acid section. In addition to that, we have to-day a foreign pyrite section, of which Mr. A. D. Ledoux, of New York, is chairman.

Then, in addition to that, is another section, the domestic sulphur section, of which Mr. Charles H. MacDowell is the chairman. The division was made there because, you see, it had to deal with two distinct propositions; the first was the foreign pyrites, which come from Spain—that is practically the only source to-day—and Mr. Ledoux being so familiar with the importation and the distribution of it, which he had been attending to always before—they put him in charge of that. Then came the question of stimulating or finding loose sources of supply in this country, and that is why the division was made so that they would not interfere with each other.

Now, Mr. Manning and Mr. White helped very much in this matter, and some mention should be made of that, because they are continually assisting us on this work, especially the domestic work. Of course, they can not do much on the foreign ores, but when it comes to getting information throughout this country on various sulphur-bearing products, we go to their department and they open up everything, and it is a continual and valuable source of information and assistance. Moreover, when we want something investigated which we can not get ourselves or have not the facilities for getting, we go to Mr. Manning and Mr. White, and they will spend 25 hours a day to do it. So in that way they do give us all possible assistance.

Now, as I understand your object here to-day, it is to find out if any production can be developed, or something of that kind. Is that the idea?

The CHAIRMAN. Yes; we have under consideration a bill to encourage and stimulate the production of these ores and metals needed in the prosecution of the war, and the legislation before us is directed along that line, on the question as to whether or not we should have the price-fixing feature and also have the licensing feature in the bill and the feature to prevent hoarding.

Mr. GRASSELLI. I am ready to give you any information that I possibly can, but it seems to me that in view of the fact that there is such a thorough-going organization here in Washington—in the Chemical Alliance—you might get a great deal more information from that source. Mr. Horace Bowker, of New York, is the chairman of the Chemical Alliance, and I could give you other names, and I am sure that Mr. Ledoux will be better qualified than I would be to tell you what the situation is with respect to foreign pyrites, because we all have to look to him to give us the ore whenever he can get it, and Mr. MacDowell has made a study and is still making a study with the committee on the domestic situation, and he can tell you all about that.

The CHAIRMAN. At whose suggestion, and when did you first meet in regard to the situation in this country relative to pyrites and sulphur?

Mr. GRASSELLI. May I be permitted to ask Dr. Manning? Dr. Manning, can you help me on that? Do you know when the chemical committee first got together? It was shortly after the European war began, was it not?

Mr. MANNING. Yes, sir; about a year ago this time.

Mr. GRASSELLI. No; that was the Chemical Alliance, Incorporated. But I mean the old chemical committee, when Dr. Nichols came down here? It was about 18 months ago. It was when they were requiring large amounts of acid and they wanted to see if a supply could be provided for abroad and also see that things were kept going in this country. This Chemical Alliance—this new organization—was formed shortly after we went into the war. So that goes back almost a year now.

The CHAIRMAN. Are all of these chemical companies in this organization that you speak of?

Mr. GRASSELLI. Yes, sir; they are. We have a meeting on the second Wednesday of each month and I invite all of you gentlemen to be present, because it is an open meeting, to see what they do. There are 240 members, according to the last statement that we have. Take the acid section, for example, that is the manufactures of sulphuric and nitric acids for explosive purposes. Every manufacturer to-day of those acids is a member of that section.

Then you come to the fertilizer section. All fertilizer manufacturers of the country are members of that section. Then you come to the alkali section. It divides itself into—I will get you that information this afternoon; I will not guess about it.

The CHAIRMAN. You may send it to my office.

Mr. GRASSELLI. Yes, sir. The Chemical Alliance has a booklet which contains that information. It gives various sections and the

officers of those sections and also the members of the sections. I will be glad to send it to you. The office of the Chemical Alliance is at 540 Woodward Building, in this city.

The CHAIRMAN. In your opinion is the situation relative to pyrites and sulphur being successfully handled by this committee?

Mr. GRASSELLI. They are doing the very best they can. The whole question with respect to foreign pyrites is the matter of ships, the bottoms to bring it over. There is plenty of ore to almost supply the world, in Spain, if it could only be brought over.

The CHAIRMAN. But they need the ships for other purposes?

Mr. GRASSELLI. Yes, sir.

The CHAIRMAN. The object of this bill, as I understand it, is to encourage the production of pyrites in this country so as to be able to take the place of the imported pyrite?

Mr. GRASSELLI I think the allotment for the United States to October 1, 1918 (this is not positive and you can confirm it), is 125,000 tons from Spain. Mr. Chairman, I am not thoroughly familiar with the details of this matter, and I would like to call upon Mr. Furst, our third vice president, who is here present with me.

Mr. MACBETH. May I ask if you smelt certain western zinc ores?

Mr. GRASSELLI. Yes; we do. I think Mr. Furst will develop all that, if you will inquire of him.

Mr. E. W. FURST. Yes; we do.

Mr. MACBETH. I would like to get it into the record as far as Mr. Grasselli is concerned.

Mr. GRASSELLI. What is your question?

Mr. MACBETH. Do you smelt certain western zinc ores?

Mr. GRASSELLI. Yes, sir; zinc-bearing ores.

Mr. MACBETH. Do you make any payment to those western zinc producers for the sulphur content in the ores?

Mr. GRASSELLI. I would put that up to Mr. Furst, because he is the one who buys all those ores and can answer with respect to the details of it.

Senator SHAFROTH. Mr. Furst, you answer the question.

## STATEMENT OF MR. E. W. FURST, THIRD VICE PRESIDENT THE GRASSELLI CHEMICAL CO., CLEVELAND, OHIO.

The CHAIRMAN. What part of the business are you particularly engaged in, Mr. Furst?

Mr. FURST. In the ore and zinc metal end of the business.

Mr. MACBETH. I would like to ask a question. Do you make any payment to the western producers of zinc ore for the sulphur content in the ores?

Mr. FURST. The ores in the Joplin field are bought at a flat price for 60 per cent of metallic zinc, which includes the payment for the sulphur content.

Mr. MACBETH. Nor in Colorado, Nevada, or any other place?

Mr. FURST. Practically all western zinc ores are bought on a sliding scale based on their metal contents, including sulphur.

Mr. MACBETH. You use the sulphur for the purpose of making sulphuric acid, do you not?

Mr. FURST. Yes, sir; we do.

Mr. MACBETH. These men receive no payment for the sulphur content?

Mr. FURST. That is included in the price. But you understand the producers of metal in Kansas and Oklahoma use open roasters where the gases are wasted. The freight rates from the Joplin field to these points are something like 70 or 80 cents a ton, whereas our smelters are located in West Virginia. We first transport the ores to our roasting plants and reship the calcined ore to our smelting plants, consequently our freight rates are practically $4 to $5 a ton higher than the rates to the Kansas smelters that do not save the sulphur fumes.

Mr. MACBETH. You save the acid fumes, do you not?

Mr. FURST. Yes, sir.

Mr. MACBETH. And you make no payment to the producers of the sulphur?

Mr. FURST. The ore is bought at a flat price, including the sulphur, as I stated before.

Mr. MACBETH. But your contracts were made some years ago before sulphur became of any value?

Mr. GRASSELLI. No, sir; the zinc companies in Illinois have operated acid plants for the last 25 years, entirely on zinc ores.

Mr. MACBETH. I have here a copy of a letter which was sent to Dr. Manning, who has not seen fit to introduce it in connection with this acid situation, which refers to your failure to pay the producers of western ores for the sulphur content in their ores and which has caused a slowing down of the sulphuric-acid industry, so far as those men are concerned.

Mr. GRASSELLI. Is that letter from a producer?

Mr. MACBETH. Yes.

Mr. GRASSELLI. Let me hear what he says, and then I can tell you. This is on the producers' side.

Mr. MACBETH. It is a letter dated May 6, 1918, from the president of the Success Mining Co. (Ltd.) In it he stated:

> I have been trying to get the necessary data to present this matter to Congress, and just to-day learned that you have been making an official investigation along the same line. So far as I know, no part of your investigation has been printed for distribution, but no doubt you have the matter in some form that will enable you to furnish it to us for use, and if so, will appreciate very much receiving the same.

Mr. Chairman, I would like very much to have this go into the record. It is a letter, as I have said, from the Success Mining Co. (Ltd.), Wallace, Idaho.

The CHAIRMAN. Do you mean the whole letter?

Mr. MACBETH. Yes. The company has a contract with the Grasselli Co. I have an analysis of the ores of that company and would like to introduce that analysis. It is contained in a telegram and I would like to present it in connection with the letter.

The CHAIRMAN. Without objection, the letter and telegram will be inserted in the record.

(The letter and telegram are here printed in full, as follows:)

WALLACE, IDAHO, *May 13, 1918.*

Senator RAVENAL MACBETH,
*Hotel Raleigh., Washington, D. C.:*

Analysis success. Ores shipped Grasselli smelter under our contract as follows: Zinc, 41.8; iron, 11.6; lead, 4.3; sulphur, 24.6; insoluble, 17.2; lime, 0.3.

Above covers lot 97, shipped Grasselli, consisting of 10 cars concentrates from composite sample; one granum each ton frequent; other shipments show greater percentage sulphur.

HERMAN J. ROSSI.

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SUCCESS MINING CO. (LTD.),
*Wallace, Idaho, May 6, 1918.*

HON. VAN. H. MANNING,
*Director Bureau of Mines, Washington, D. C.*

DEAR SIR: Our company has interested itself in the question of sulphuric-acid production, with a view, primarily, of seeing why it should not be paid something on account of the sulphur content of its zinc ores, which in the past it has shipped to the Grasselli Chemical Co., paid the freight on this sulphur value, and received absolutely nothing in return. I inclose herewith copy confirming my telegram of even date, which I hope will have been sufficiently explicit to have brought us what we desire.

At the outset of my connection with this company I was struck with the injustice of our furnishing a valuable raw material on our ore contract without receiving any pay therefor. An investigation revealed the fact that the sulphur content of our zinc ore was just as available for the making of sulphuric acid as is pyrite, which at present commands a high price in the market, as you know. Now that Congress is about to subsidize the production of pyrite, it naturally occurs to one that first all zinc blende should be handled in acid-making plants. If it were, then zinc-ore producers could insist that they be paid for the sulphur content of their ores, and not be forced to sell their ores on contracts whose terms are fixed by the competition of zinc smelters who waste the sulphur. It is clear that if two-thirds of the lead smelters wasted the silver content of lead ores, we would never get a cent for the silver content of the same. In the same manner we suffer from the zinc situation to-day.

I have been trying to get the necessary data to present this matter to Congress, and just to-day learned that you have been making an official investigation along the same lines. So far as I know, no part of your investigation has been printed for distribution; but no doubt you have the matter in some form that will enable you to furnish it to us for use; and, if so, we will appreciate very much receiving the same.

A full presentation of the matter will require data of the production of acid during the last year and the sources from which it was derived; the production of zinc ores for the same period, the various kinds, sulphur content of each, and availability for the production of sulphuric acid; the location of present acid plants and of smelters which do not produce acid; a consideration of markets for acid in peace times; and, in case these smelters are not situated geographically so as to compete with present plants, whether the ores can not be stopped in transit, the sulphur roasted out, and then they be shipped on to the smelter (as the Grasselli Chemical Co. does to-day).

Also, there would be necessarily considered the costs of constructing acid plants and all accessories for acid production, cars, etc., for marketing, and, in short, all the various ramifications that the subject takes in order to be fully comprehended. I am sure that if you have investigated the subject you will have covered it thoroughly, more so than we could hope to do it with unlimited time and expenditure.

We have been operating under a contract entered into with the Grasselli Chemical Co. two years ago, under the then very abnormal conditions brought about by shortage of smelting capacity coupled with an excess of ore, with the result that we get nothing and the smelter takes everything. With the low price of spelter we were forced to suspend operations. We are advised that our ore is the most desirable of any for acid production, yet that fact did not give us a cent additional compensation nor a minute's consideration. To-day I have learned that at least one sulphuric-acid consumer was forced to pay no less than $120 per ton for acid, notwithstanding market quotations run about $35 per ton. We think it about time zinc producers were fully advised of the whole situation, and are willing to do our share toward advising them.

Aside from other considerations, from a conservation standpoint every available source of acid production should be utilized, and all excess used in making fertilizers. Our soil, and especially that in the West, needs all the enrichment it can get, to the end that each acre may produce its maximum. It ought to be worth while to fight for that.

If there is any expense connected with the matter, please wire the cost, and we will have it taken care of at once. Speed is necessary, for, as you know, this matter is just now engaging the attention of Congress in one form and another.

Whatever you will be able to do for us in this matter will be fully appreciated.

Very truly, yours,

SUCCESS MINING CO. (LTD.),
By FRANKLIN PFIRMAN, *President.*

Mr. MACBETH. The sulphur situation with respect to western producers of zinc ores and the producers of such ores in the Joplin district has been carefully examined into, and comprehensive data has been filed with the Bureau of Mines showing the possibility of sulphuric-acid production from such ores. You have it in your files, have you not, Dr. Manning?

Dr. MANNING. I suppose so.

Mr. MACBETH. And it should be introduced here—showing that the Joplin field alone could take care of the entire sulphur situation.

Now, these western producers are not being paid. They ship the ores containing sulphur to the eastern men who have smelters in connection with their acid plants. The Success ores contain 480 to 500 pounds of sulphur per ton, which these gentlemen take and make acid of, and these miners get nothing for it. Now, I am looking at it from that standpoint.

Senator SHAFROTH. Tell me how much of an item that is?

Mr. GRASSELLI. Excuse me; whom do you represent, the miners?

Mr. MACBETH. Yes.

Mr. GRASSELLI. What is your name, please?

Mr. MACBETH. My name is Macbeth.

Mr. GRASSELLI. From where?

Mr. MACBETH. From Idaho.

The CHAIRMAN. Is there any difference between the practice of 10 or 15 or 20 years ago and now?

Mr. MACBETH. I could not say.

## STATEMENT OF MR. E. R. GRASSELLI—Resumed.

Mr. GRASSELLI. Mr. Chairman, I would like to straighten out this question. The buying of ore to-day, whether it contains zinc or copper or any other metal, is exactly the same as it has been for the last 30 years. Take zinc ore, for example. You can not compare it with pyrite ore, either Spanish pyrites or domestic pyrites or coal brasses, and which are used in an ordinary furnace of comparatively simple construction, to release the sulphur fumes, costing in the neighborhood of $40,000 or $50,000, for a normal unit of burners.

Now, when you come to the burning of zinc ore, there you have the sulphur combined in such a way that it requires entirely different treatment, and in order to extract the sulphur from the zinc ore the same furnace capacity for pyrites ore that I mentioned, to cost $40,000 or $50,000, would require a furnace and other apparatus that would cost $120,000 to $150,000 in order to handle a like amount of zinc sulphur-bearing ore.

That being the case, only those people who are properly equipped can use zinc ore. The acid plants of every zinc smelter in the country are being operated to their fullest capacity, but not on zinc ore, because they are consuming all the zinc ore possible, which is limited

entirely to the spelter consumption, and the difference in capacity for acid is made up by using pyrites and brimstone.

Zinc ores, as a rule, contain about one-half as much sulphur as the high-grade domestic and imported pyrites. The cost of roasting or calcining zinc ores in very much greater than is the case in roasting pyrites. No artificial heat is required in the roasting of pyrites, whereas a considerable amount of coal is necessary in the roasting of zinc ores, which is a large item of expense. The cost of a plant for the production of zinc acid is also very much greater than is the case where pyrites is used. Also a larger quantity of zinc ore must be handled per ton on acid produced. For example, 4 tons of zinc ore must be handled to produce the same quantity of acid as obtained from 1 ton of brimstone. Also 2 tons of zinc ore must be handled to produce the same quantity of acid as obtained from one ton of high-grade pyrites.

All these items have a very material bearing on the sulphur question; furthermore, the additional freight on zinc ore to eastern smelters as previously referred to is quite an item and largely enters into the matter.

The smelting and acid operations of the zinc business are closely linked together. Smelting costs have increased enormously during the past two years, and very few, if any, of the smelters are breaking even to-day. A large number of zinc smelters have already shut down.

The quantity of zinc ore which can be consumed depends entirely on the demand for spelter. Since 1916 the consumption of spelter has probably decreased from 30 per cent to 40 per cent. The smelters (which ordinarily would shut down on account of the decreased consumption) are, on account of the urgent need of acid, operating their acid plants. In other words, they have shut down only the smelting end of their plants and have stopped the use of zinc ore, but have replaced it by the use of brimstone and pyrites, thus insuring the maximum production of sulphuric acid; this necessarily has made additional demands for brimstone and pyrites and makes it more important that new sources of supply of this class of material be developed. As I understand it, this is the object of the bill, and to my mind it is very essential, as the Government hardly can expect consumers to invest their money in the development of prospects, especially under the now existing abnormal war conditions.

There are no doubt many prospects which might be developed into producers if the money could be provided to develop them. The question of new sources of supply has frequently been brought to the attention of our company by property owners who have not sufficient funds to conduct the necessary prospecting. Moreover, the parties who contemplate opening up new properties insist upon long-time contracts at war-time prices, which, of course, are somewhat hazardous, since the duration of the war is uncertain, and such contracts would make it impossible for manufacturers to compete after the war is over.

Now, regarding the acid production of the zinc smelters, you can not increase the output of sulphuric acid in that direction, since the acid plants are now running at full capacity, and when you take into consideration the fact that every one of these concerns are ex-

tracting the sulphur in order to make sulphuric acid and losing at the other end in their spelter I think they are doing about all that could be expected of them, because the price of ore to-day is up to the point where, when you make and sell the spelter——

Mr. MACBETH. You say up to the point?

Mr. GRASSELLI. I said the price of ore is up to the point where the present market price on spelter does not let the smelters out, even on the metal. That is the situation to-day.

Mr. MACBETH. Do you know what it takes to produce zinc to-day at the present market? They are simply working along to keep their organization intact.

Mr. GRASSELLI. That is what I said. I said the price of zinc ore to-day is so high that you can not produce spelter from it and come out even.

Mr. MACBETH. If the price of zinc ore is so high that you can not produce spelter to-day and make a dollar out of it, as you state, you must make your profit from the sulphur content?

Mr. GRASSELLI. Well, we can reverse that and put it the other way: Say the price of spelter is so low to-day—the price at which the miners of zinc ore are selling their ore—that the spelters can not make any money out of the product.

Mr. MACBETH. Now, what are 500 pounds of sulphur worth?

Mr. GRASSELLI. The Government price for sulphur is $22 a ton in Texas and Louisiana.

Mr. MACBETH. It is practically from $20 to $25 a ton?

Mr. GRASSELLI. It is $22 a gross ton.

Mr. MACBETH. Now, the miners——

Mr. GRASSELLI. Now, Mr. Chairman, I would just like to finish my statement, and it is this: That ever since zinc ore has been produced in this country it has been sold at a flat price. That price included everything that was in the ore, but in order to have a basis on which to work they took the price of spelter at St. Louis, and whatever that spelter price was at St. Louis fixed the price of the western ores. Now, because all of a sudden the war condition and the world condition has made a tremendous demand for sulphuric acid—and we can not get along without sulphuric acid in explosives—these western miners are coming to the conclusion that they might be able to get some more money out of their product, and they are now evidently trying to get a price on sulphur contents in the ore, according to Mr. Macbeth. The result will be that if they do, then, of course, as long as the war continues we must continue making sulphuric acid, and we have got to get the sulphur wherever we can find it and at whatever cost, and the western ore miners may be able to stick the producers of sulphuric acids for the price of the sulphur in their ore, but as soon as the Government demand, or the war demand, drops off there will be no more of that ore used. I do not see any reason why, just because we have a world war and a very critical condition in sulphur in this country, that producers of zinc ore should all of a sudden get the idea that they have got to be paid for a mineral content in their ore which for the last 30 years they have not thought anything about asking a price for and which, as I have already stated, the cost of the sulphur was and is included in the cost of the ore.

Now, take the situation with respect to sulphur. At the last meeting of the Chemical Alliance it was thought probable that we would be able to get through this year by the handling of this critical condition with the sulphur down in Texas and in Louisiana, which you gentlemen know about. There they are extracting the sulphur from the ground in a melting process through wells. If any of those wells go down, then that production will be cut off, and it will be a very serious proposition. We are faced to-day, however, with a big deficit for 1919 on sulphur for the manufacture of explosives and sulphuric acid, and that is what we are all working on to-day, to see what can be done. The domestic pyrites and sulphur-bearing ore condition in this country has been gone over very thoroughly. I do not know that we are going to get any great big increase right away, but nobody has stopped working on it; we are all working on it, with the hope of developing new sources of supply.

When we come to such a situation as that and review the conditions and see how serious they are, then it is up to the producers of sulphur in any form in this country to not try and interject any new things to complicate matters by trying to get a dollar more than was ever had before. What I contend with regard to this question, that Mr. Macbeth brings up, is that, if for the last 20 years the contents of that are included in the flat price which was paid for that ore all other mineral contents, then this is not a time, when we are having these terrible conditions, and especially sulphur shortage, for them to interject the question of a price on any mineral heretofore included always in the price.

Mr. MACBETH. Mr. Chairman, our position, from the western standpoint, is that these gentlemen are making an abnormal amount of money from our product. The western miners of zinc ore, in Montana, Idaho, Utah, Colorado, and Nevada, and all over that country, are not getting anything for their sulphur, but these gentlemen are making sulphuric acid from our sulphur and refusing to pay us. You know that the western producers have refused to ship to you; is that not a fact?—which slows down the sulphuric acid situation.

Mr. GRASSELLI. I will answer that question by saying that in the first place the price which we are getting to-day for sulphuric acid is the price which was fixed by the United States Government after their experts had been through our books to see what it costs us to make it. In the second place, in reference to these exorbitant profits, which it is said the chemical manufacturers are making to-day—the average market price to-day for spelter is about 7¼ cents a pound. I do want to get this statement in, because it is said so often that "these chemical men are making such exorbitant profits." Now, at 7¼ cents for spelter it is manufactured at a loss, and that has been verified by the Government. They have had their experts on the books and have the information. Now, you tell us something about the price of ore to-day and what it was two or three years ago?

Mr. MACBETH. I have the data.

Mr. GRASSELLI. My remarks are based on the Joplin ore price at $50. Now, one more question that you brought up was that the acid people are not producing their output——

Mr. MACBETH. No; pardon me; I said it was slowing down on account of the western companies refusing to ship you ore, because they are not paid for the sulphur content.

Mr. GRASSELLI. There is no concern to-day from whom we are buying ore, or with whom we have a contract to buy zinc ore, that has refused to ship us any ore except the Success Mining Co., and that condition I am going to ask Mr. Furst to explain to you. In the second place, there is not curtailment of a pound of sulphuric acid from these zinc ores in this country to-day except in such cases where the companies could not make any money on spelter on account of the low price of spelter. In those cases we succeeded in getting those concerns to take in an ore that does not contain zinc, in order to make sulphuric acid. That is what the acid manufacturers are doing. There are a number of spelter producers who could not operate their sulphuric acid works on account of losses in their spelter operations. To those pyrites is being supplied to enable them to continue producing sulphuric acid only, because of the urgent need of this acid to carry on the war.

Now, with regard to our dealings with the Success Mining Co., I will ask Mr. Furst to tell you about that.

Mr. FURST. We have a three-year contract with the Success Mining Co. for their entire output of zinc ore. About two months ago shipments ceased. On investigation we found that they were shipping their ore to another concern, notwithstanding our contract. We then had our attorney serve notice on them that we would take steps to enforce our contract. We have been told that they now have very little ore blocked out. The mine has been shut down and is not operating at present.

Mr. MACBETH. The Success Mining Co. is a concern the stock of which is owned by a large number of people of the United States, and I would like to interpose an objection to the gentleman's statement concerning the Success Mining Co.

The CHAIRMAN. Is there any other statement that Mr. Furst wishes to make?

Mr. FURST. We have a long-term contract with the Success Mining Co. on a sliding-scale basis. We have not at any time declined to accept the product of the Success Mining Co., although we have been in controversy with them in regard to their shipping their output to others which we maintain should have been shipped on our contract.

The CHAIRMAN. Have you any other statement to make, Mr. Furst, relative to the conditions that prevail throughout the country now as to the supply of sulphuric acid and how it is being handled, whether successfully, in your opinion, or not?

Mr. FURST. I think Mr. Grasselli's suggestion that this matter be handled through the Chemical Alliance is a very good one, since practically all the concerns engaged in the acid business are members of the alliance, and I believe are cooperating with Mr. Manning and the Government; in fact, many of them are examining prospects brought to their attention, and in some cases developing them. The main trouble is the uncertainty of the market over a period long enough to warrant private individuals putting money up to develop properties. In other words, if we knew that sulphur would be 20 or 25 cents a unit for two or three years, many acid manufacturers might then be disposed to develop the properties, but in normal times the price of imported pyrites is around 12 to 13 cents a unit at the seaboard; consequently it is quite out of the question to ship

ore from Colorado east because the freight alone is almost equal to what pyrites brought before the war. As I understand it, the total production of domestic pyrites in 1916 was around 425,000 tons. What it was in 1917 I do not know. I do not think the figures have been published as yet; have they, Mr. Manning?

Mr. MUDD. Four hundred and sixty thousand tons.

Mr. FURST. The imports in 1916 were 1,244,000 tons; in 1917, 967,000. At a meeting which was held in the early part of March, where representatives of the domestic and Canadian producers were present, the statement was made that the domestic production for 1918 would be 1,200,000 tons. Now, have we anything to confirm this, Mr. Manning? It seems a very material increase over 1917.

Mr. MANNING. I did not get that question.

Mr. FURST. I would like to know how the estimate of the 1918 production of pyrites reported at your meeting on March 11 was made up. In other words, how was the 1,200,000 tons made up?

Mr. WHITE. That was a maximum estimate on the basis of 800,000 tons of domestic ore.

Mr. FURST. Do you think that will be realized?

Mr. WHITE. It will not be realized if the present labor condition and the condition of the pyrite mines in the South continues, unless something can be done to straighten out the pyrite situation in the South.

Mr. FURST. That is what I believe. We are very much afraid that the estimate of 1,200,000 tons will not be realized.

Mr. WHITE. That was only made on a constructive estimate that may be put into effect. That estimate of 800,000 tons was of domestic ore, and if those constructive factors are not put into effect, in view of the present paralysis of the pyrite situation in the South, due to the labor situation, it will not be straightened out unless something is done in a more active way.

Mr. FURST. I see you have in the statement prepared by Mr. Wells a total of 1,200,000 tons domestic and Canadian ore, and 120,000 tons of Spanish pyrites. Now, based on the 1916 and 1917 output, that is equivalent to, say, a 150 per cent increase, which is very much greater than I think it will be. Now, how are we going to make up the deficiency?

The CHAIRMAN. Would a bill of his sort, in your estimation, aid in developing the domestic pyrites?

Mr. FURST. I do not think there is any question about it.

The CHAIRMAN. How do you feel about it, Mr. Grasselli?

Mr. GRASSELLI. I think so, because it gives probable producers some place to go for the money that is needed.

Mr. WHITE. I would like to bring out that point a little more clearly, if I may. May I ask Mr. Grasselli, if the import is curtailed, according to the present plans, there is going to be a serious shortage of material for sulphuric acid, is there not?

Mr. GRASSELLI. I do not see it in any other way, because I do not know where it is coming from. We thought we were going to get a big supply from these coal brasses, but I do not think it is going to come out in that way.

Mr. WHITE. Under those circumstances there are only two things to do, to increase the exports or produce more pyrite sulphur in this country.

Mr. GRASSELLI. That is the idea.

Mr. MACBETH. I think it is pertinent to bring in the fact that the Bureau of Mines needs money for its war work. An appropriation was asked for by the Bureau of Mines of a total of $250,000. This bill carries $500,000, I think.

The CHAIRMAN. This is a separate work from what they are carrying on in their department.

Mr. MACBETH. Now, according to Mr. Grasselli's statement a moment ago.

The CHAIRMAN. That was along another direction.

Mr. MACBETH. No; the bureau needed this money to look into the several metals and see what could be done with them. Here is $250,000, that the bureau has been asking for that purpose.

Mr. SMITH. May I ask a question?

The CHAIRMAN. Certainly.

Mr. SMITH. Mr. Grasselli, taking up the simpler matter than the price for zinc ores, what has been the trend of prices for the past two years for domestic pyrites, such as you purchase?

Mr. FURST. If I may answer that, the price of domestic ore has ranged from 8 to 11 and 12 cents a unit at the mine, depending upon the quality of the ore and the grade.

Mr. SMITH. From 8 to 12 cents?

Mr. FURST. Yes, sir.

Mr. SMITH. What price did you pay for Illinois pyrites, say, two years ago?

Mr. FURST. From $3 to $3.50 a net ton, depending upon the quality—you mean coal brasses?

Mr. SMITH. Yes.

Mr. FURST. But you understand the coal brasses are bought on the net ton basis?

Mr. SMITH. You say about $3 a ton?

Mr. FURST. $3 to $3.50 at the mine. But there is a loss of about 20 per cent in breaking them—that is, breaking them to kiln size, so that they will pass through a 2½-inch ring (the required size), and there is also a loss of 15 to 20 per cent in storage, due to sulphating, etc.

Mr. SMITH. What price do you offer now on contract?

Mr. FURST. I think we are paying around $4 to $4.50, if I am not mistaken. Our contracts do not expire until the fall.

Mr. SMITH. You spoke of a fixed price for your product of acid. How does that compare with your 1916 price for acid?

Mr. FURST. I can not answer that.

Mr. GRASSELLI. The acid price for 1916 is the same.

Mr. SMITH. The fixed price is the same?

Mr. GRASSELLI. Yes; it is the same, but the raw materials have been going up right along, and labor has been going up right along. There has been no adjustment on the finished price as yet. That is under advisement by the Government.

Mr. SMITH. Do you think the price of $3 or $3.50, net ton, for coal brasses is sufficient to promote production or encourage the production of that product?

Mr. GRASSELLI. I would like to go into a little explanation of that. Pyrites is sulphur combined with iron or other minerals. The acid

produced from pyrites is acid that will meet all the specifications to-day for explosives and for the trade. Now, as to coal brasses, that is sulphur that is contained in certain coal mines and can not be thoroughly cleaned from carbon, so they have a considerable lot of carbon with it, and the acid that is produced from this coal brasses can only be used in certain places permitting of the effect of the carbon and does not comply with all the specifications in general use for sulphuric acid.

Mr. SMITH. It can be used for fertilizer, can it not?

Mr. GRASSELLI. Yes; it can be used for fertilizers, and there may be one or two other places where it might go, but it can not be used generally.

Mr. SMITH. For those special uses?

Mr. GRASSELLI. Yes, sir; for those special uses.

Mr. SMITH. Do you get a lower price for fertilizer acid?

Mr. GRASSELLI. No; but the acid is the same; it answers the same purpose in every respect except it is a dark color; it may be black. The carbon is held in suspension, but as far as the acid is concerned in every other respect it is the same as if it were white.

Mr. WHITE. Is that a bad feature of the condition of the acid, or are the specifications against it?

Mr. GRASSELLI. I personally do not think it is going to make any difference. It can be used just as the other acid can for many purposes.

Mr. WHITE. It is used for all purposes, as far as you know, but the present specifications are against its use?

Mr. GRASSELLI. No; I do not believe it has been used in explosives, but it is being used in fertilizers and one or two other industries where it does not make much difference. But you can not clean the acid; the carbon going right through the whole operation. You can not filter it, or do anything with it. The acid stays black all through.

Mr. SMITH. Is $3.50 for coal brasses satisfactory to the producers of that ore?

Mr. FURST. Their labor is now costing them more money, but I do not believe you will develop a much larger production even at a $5 or $5.50 price. But when you come to concentrating coal brasses it is quite different.

Mr. SMITH. That will give you a better quality?

Mr. FURST. Yes, sir. The great objection to using coal brasses at this time—that is, lump—is that it reduces the output of acid. In other words, you can not charge as large a quantity of coal brasses on lump burners as you can of iron pyrite on account of the extreme heat. The material we get contains, I should say, from 7 to 10 per cent carbon, and that burns up and makes a very hot oven, and also results in a very much higher niter consumption than is the case when using straight iron pyrites.

Mr. MACBETH. Why do not you gentlemen go to Leadville? There is one dump there that contains over a million and a half tons of pyrite.

Mr. FURST. We are now working to get freight rates that will enable us to use it.

Mr. MACBETH. They will make you a present of it.

Mr. GRASSELLI. The domestic pyrite section of the Chemical Alliance has been and is now working to get that Colorado ore here, East. The freight rates to eastern points are high, and we understand the producers are asking about $5 per net ton for the ore at the mines. You should bear in mind that the prices on acid have been fixed and there is no attention given at all to the increased price on raw material that is continually going up, nor is any attention being paid to labor that has increased continually. These pyrites from Colorado that you speak of could be used; we are using them, or have been, but the freight rate to eastern points make their use prohibitive.

Mr. MACBETH. I would like to ask you what you are using pyrite for, then?

Mr. GRASSELLI. We are not using any just at the moment. We have used them from Colorado to determine the fact that they are usable.

Mr. GEORGE OTIS SMITH. I would like to ask your opinion as to what agency, or what method, should be used in determining the price for raw material. The Government is fixing a price for its product. What agency would you favor for fixing prices?

Mr. GRASSELLI. They have tentatively got that all worked out, because they made prices on sulphuric acid, and lately they have had a series of investigations on sulphuric acid costs, and I understand are going to adjust prices on sulphuric acid. Whether they will go down or up I do not know. How they will handle it I do not know.

Mr. SMITH. What about the price of your raw material? Would you favor a Government agency in determining what is a fair price for your coal-brasses lump or coal-brasses concentrate?

Mr. GRASSELLI. If such a thing as that were done, we would all know where we are. To-day we do not know. There should be a control of the raw material as well as every other thing that goes in, and, above all things, there should be control of labor. However, I do not want to go too much into that detail. There is no control of labor to-day. We have since the first of the year in our factories had to increase our labor several times. That goes into hundreds of thousands of dollars every time it happens. There is no attention paid to that, and still our Government-made price for sulphuric acid stays unchanged.

Mr. SMITH. Mr. Furst spoke of the fact that the labor cost also enters into the cost of the coal brasses.

Mr. FURST. Labor largely enters into the cost of cleaning coal brasses.

The CHAIRMAN. It is now 12 o'clock, and the committee will adjourn until to-morrow morning at 10 o'clock.

(Accordingly, at 12 o'clock and 10 minutes p. m., the committee adjourned until to-morrow, Tuesday, May 21, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

**TUESDAY, MAY 21, 1918.**

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met at 10 o'clock a. m., Senator Charles B. Henderson (chairman) presiding.

Present: Senator Shafroth.

The CHAIRMAN. We will proceed, gentlemen.

## STATEMENT OF DR. GEORGE OTIS SMITH, DIRECTOR OF THE GEOLOGICAL SURVEY.

Dr. SMITH. In reply to some of the comments that have been made regarding this proposed legislation, I wish to state first that I believe the title of this bill correctly expresses its scope and that the bill represents one large idea rather than three or four disconnected and possibly antagonistic ideas.

The topics of stimulation, control, and price fixing that have been discussed by some of the witnesses are not necessarily distinct topics or purposes at all antagonistic.

The central thought, as I read this bill, is that there is a present necessity of furnishing certain absolutely essential supplies of raw materials. In connection with those supplies there is the self-evident need of stimulation of domestic production. Wherever and however it can be increased the domestic output should be stimulated.

Now, price fixing may or may not be a direct method of stimulating production. With many of the mineral substances under discussion, I believe price fixing will be found to be the best method of stimulating the domestic production; but in other cases, where stimulation by any and all means can not bring domestic output up to the mark required by domestic consumption, there needs to be some control of distribution. Here again price fixing may be one means to secure this end of the proper distribution of what supplies are available. I would say that encouraging production is the primary purpose of the bill, and in that connection the control of supply is sometimes equally important with the stimulation idea, and price fixing may or not be a necessary part of the control or stimulation of output.

I think, if I may make a personal explanation of the reasons for my interest in this legislation, I would in a way answer some of the arguments that have been put forth by the opposition to the bill.

First, I have had no part in the preparation of the bill or in any

of the amendments that have been suggested, so I think it must be admitted that my advocacy of the legislation is not tinged with any pride of authorship. Neither do I have any expectation that the enactment of this legislation will result in any enlargement of function for the bureau that I represent or any enhancement of its prestige or any great increase in its activities. I make this statement to show that I am not actuated by any bureaucratic motive for supporting this bill, as has been indirectly intimated by some of the opponents of the legislation, who say that this is simply another measure that is put up by those who wish larger activities on the part of the Federal bureaus.

My support of the legislation is based upon a very strong conviction of the need of larger power being given to the Government at the present time in handling this important matter of the supply of raw material, and that conviction is based upon my extended and intimate experience with the subject during the past months and even the past years.

Some of us in the Federal service have keenly realized this need and have felt large responsibility, but we have had rather limited authority in the matter. There has been some duplication of effort and there has been much uncertainty of obtaining the results that we seek. We have tried to render first aid to these infant industries, answering inquiries from the producers all over the country, encouraging them in the matter of increasing their output, helping them to get embargoes lifted, assisting them in the matter of securing car supply, and, in some cases, securing for them a supply of coal or a supply of fuel oil, and being, in a way, the next friend to the producer here in Washington, that producer, in some cases, being on the Pacific coast, and needing some one to represent him in Washington to secure this well-deserved assistance.

But in going at this, both the members of the Bureau of Mines and the members of the Geological Survey have had to do this work with no well-established authority. We have not been in a position to speak for the industry as a mineral administrator, under this legislation, could speak, but in spite of that we have done all that we could see before us to do. The important matter of getting the producer into close touch with the consumer and the consumer into close touch with the producer has been a task on which we have been working ever since 1914. We have accomplished this through correspondence many hundred times and for many different products. We have had a somewhat well-established practice of from time to time sending out lists of new operators to the consumers, and also sending lists of consumers of the particular ore to the operators. With this practical experience, then, I have felt the need on the part of the Government to meet these obvious needs of the industry as they arise, and to have larger power to handle each situation as it arises. Of course, when I say that I want to emphasize the fact that each situation to-day is different from the situation as we knew it last week, or as it exists even to-day for some other mineral product.

From the standpoint of the Geological Survey the large benefit that will come to us from the enactment of this legislation is simply that there will be, we think, a larger use made of the results of the survey's investigations in the past, and of those that are in progress.

and that more administrative action will be based on the facts that are already available.

Mr. White, of the Bureau of Mines, and one or two of the corporation officials representing the steel industry, touched upon a matter which I think is of very large importance, namely, that price fixing must include the time element as well as the price element. Stimulation of domestic industry involves the creation of confidence in the market. That means both as to the quantity of product that can be sold as well as the price at which it can be sold. In my opinion, a high price put on any mineral products for a few months would result in only a feverish impulse. It would not be of lasting benefit to the industry as compared with a much lower price that would be assured for one or two or three years. The effect of a price established for a considerable period of time would be, of course, to stabilize the industry and bring out the maximum practicable output. So, I think, the legislation should provide for the fixing of a minimum price and for a definite period, with this primary idea of stimulating production. I think it is just as important, in other words, for the mine operator to know how much and how long he can sell his output as to know at what price he can sell it.

There has been some discussion regarding the difference between the minimum price and the maximum price. Of course, it is not possible or at least not practicable to generalize too much, but I would offer the suggestion that the minimum price is most effective in the case of raw materials, while in the case of some manufactured products, or some derivatives, the maximum price may be found advisable.

There has been expressed the fear of the danger of a runaway market, and the need of protecting the consumer of these raw materials by fixing a maximum price. I think that such control of distribution as may be provided in this legislation would obviate the danger of a runaway market. Of course, the minimum price is directed toward helping the primary producer. The man that we are interested in is the operator of the new mine or the operator of an old mine who is enlarging his plant. On the other hand, the maximum price would be directed to helping the ultimate consumer. Looking at the two in that way, I do not think that the two kinds of price fixing are necessarily antagonistic. The public interest is in the line of securing maximum production by limiting the downward movement of price, but the public interest is also served by protecting, in some cases, the consumer, by the other method of limiting the upward price of the derived product. As has been suggested by some of the members of the committee, we speak sometimes in terms of maximum price fixing when we are concerned with the consumer, but I think that we are agreed that when we are thinking of the producer the minimum price is the means to secure that end.

The first consideration, of course, in this matter of price fixing, is to answer the question, What do we want, and are we willing to pay the price to secure that? I think that minimum price fixing will be found to promote the end that we are most interested in, which is a larger output, provided that the minimum price is high enough. Of course, on the other hand, the maximum price is restrictive. It is restrictive in purpose and it is restrictive in effect if it is low

enough, so as I look at it, the two kinds of prices are remedies for different ailments.

Senator SHAFROTH. Dr. Smith, do you recognize the fact that the best means to curb the excess profits is by a tax in the nature of a war tax, so as to catch those profits or prevent them from being made, and if the prices do rise, knowing that the Government will catch all, or a large portion of the excess profits, which can be applied directly to the prosecution of the war?

Dr. SMITH. Senator, I agree thoroughly with the principles of the income tax and the excess-profits tax, but at the present time I am not assured that they will catch all of what you and I would consider excess profits. I have had my attention called by one of the members of the survey to a fiscal statement published in the Financial Chronicle for one of the companies making crucibles, graphite crucibles, that we have discussed here. I have not found out what the capitalization of that company is, but it is one of the older companies, and their sales last year were a little less than $11,000,000. Their net profits were nearly $2,500,000, after the Federal taxes had been subtracted. They paid dividends amounting to $200,000. I should think that that net profit of over 20 per cent of their sales was rather large, when you consider that the Federal tax had been already subtracted; and I question whether there are not many cases where the present system of taxation would fail to take up the slack between the large successful company and the smaller company that is operating with relatively higher costs.

Senator SHAFROTH. Do you not recognize the fact, Dr. Smith, that what a thing is worth is what it brings in the market, if there are no combinations in restraint of trade?

Dr. SMITH. I think that is a fair definition of value, except that under conditions like the present it is impossible for us to place a value upon some of these products to the Nation.

I think the English have a phrase of "key industries." They are industries that have a larger value to the Nation than their volume of business would seem to indicate, such as the dye industry, upon which the larger and important textile industry depends so intimately. I thing that there are some minerals that, in a similar way, could be considered "key minerals." It is not so much what is the value of a little chromite or a certain amount of manganese, but the fact that the Nation's steel industry depends upon these particular materials, both the volume of which and the value of which are relatively insignificant, as compared with the volume and the value of the iron ore and coke that go in to make up the steel, so I think, if you will allow the expression, the strategic value of chromite or manganese, under present circumstances, is quite different from the value, as you define it, measured by the price the substances would bring in the market.

Senator SHAFROTH. Don't you recognize that every political economist regards that the attempt to fix a maximum price on anything, unless that maximum price is very high indeed, is contrary to the principles of political economy and has proven a failure when undertaken?

Dr. SMITH. I have lost faith in maximum prices, except in critical situations where, as you might suggest, there is some possibility of their being restraint of a free market.

Senator SHAFROTH. Of course, we all want low prices. We believe that whenever you stimulate production the increased amount by reason of that stimulation automatically brings down the price. That is true except in cases where there is a combination in restraint of trade. It seems to me the way to catch that is to prosecute these people as diligently as we can for combination in restraint of trade, or another check upon that tendency is to impose such a tax on excess-war profits that the Government will get two-thirds or three-fourths of the profit that might be made. That automatically works without any difficulty whatever, but when you attempt to say that you are going to fix under a system of licenses a certain price or a certain amount, say $25 a ton on tungsten, and a man says that he can not produce tungsten at that price, the effect is to make the minimum price and the maximum price the same. It seems to me that it discourages production. A man will not undertake it. These very conditions that exist now will not exist after the war. There will, however, be such radical changes that you can not forecast what the selling price of an article will be. Take tungsten, for instance. It may be that the miners will be paid $15 or $20 a day. Then the price you fix to-day will be totally inadequate.

There is no question that there is an element in price fixing that is controlled to some extent, perhaps unconsciously, in favor of a certain class to which the person that does the fixing naturally adheres or has his faith or doctrine tied to. For instance, we have the consumers. We have these steel factories. They have large representations on the boards down here. They are consumers, and it is human nature for them to buy where they can buy cheapest. If they get the power to fix a price, it is human nature for them to fix a price which they think will make a profit and which might be considered by the man who produces as not a profit at all.

My theory is that instead of having this continual quarrel that you will have when you say that the price is too low, if you let it be controlled by supply and demand, checking the abuses by a tax upon excess profits, you will accomplish a great deal more. A man will say, "I went into the business; I thought I could produce tungsten at that price, but I found that I could not. I took my chance." It is the same chance that every one of these miners undertakes. He is satisfied to take it, but just as soon as the people who have an interest in the consumer attempt to fix that price he will be quarrelsome as he can be and will say that justice has not been done him.

Dr. SMITH. I think, under such a plan as is proposed in this legislation, it would be contemplated that the administrative officer would represent both the consumer and the producer. In the matter of tungsten, I should not expect a maximum price to be placed upon tungsten ore. I can think of a case where it might be advisable to place a maximum price on ferrotungsten. One of the earlier witnesses before the committee—Mr. Moore, of St. Louis—brought out the fact that the price of manganese ore had not risen at all in proportion to the price of the derivative, ferromanganese. You will probably remember that the other day one of the witnesses representing the consumers of manganese and the consumers of ferromanganese, as well as the producers of ferromanganese, made the statement, in answer to the direct question, that the ore which goes

to make up a ton of ferromanganese had increased or would be increased in value under the proposed scale of prices, which is higher than the present scale of prices, only $100, whereas the current price for ferromanganese had increased over prewar prices $200. There is a derivative going up $200, and the ore that goes into that derivative only $100. Of course, we must keep in mind that there are other increased costs in that ton of ferromanganese, but it would be, I think, the function of this administrator to see whether or not it might be necessary to put not only a minimum price on the ore, but a maximum price on the derivative. It might not be necessary, but it would be a matter to be considered. I do not think that he would take any account of placing that maximum price on the manganese ore or tungsten ore. The maximum price fixing is directed simply toward some seller of the commodity, with the idea of protecting the consumer.

Senator SHAFROTH. Now, Dr. Smith, there was a suggestion made here by Mr. Taylor, of Colorado, on yesterday, that indicated that he was opposed to both the maximum and the minimum price fixing, but he was heartily in favor of this fund being increased to $50,000,000, the Government to undertake to use this as a revolving fund to buy these various rare metals, to allocate them and dispose of them at the average price to the steel manufacturers who might need them. What do you think of that proposition?

Dr. SMITH. The production that Mr. Taylor was speaking of, first of all, was the potash. He felt that if the Government would contract, as I understood it, to take potash that he might produce from the tailings that were already available, a certain tonnage at a certain price, he could see his way clear in involving himself to the extent of a large investment. He would see an opportunity of getting his money back. In doing that, he would not only secure his investment, but he would place himself in a position, as could anyone else in a like condition, place the producer in a position to furnish the country a cheaper potash after such a contract might be filled.

Senator SHAFROTH. Well, what do you think of that system?

Dr. SMITH. Taking that case, as I understand it, I think it would be eminently practicable. It would be for the public good not only to secure a supply of potash at the present time but to start an industry that might be able to make a second contract or to furnish the general market with potash at a much lower price after they had amortized that plant.

Senator SHAFROTH. What do you think of that as applied to tungsten?

Dr. SMITH. I think that giving the Government the power to do that sort of thing would be decidedly to the advantage of the country at this time.

Senator SHAFROTH. Do you think that would be true of each of these metals mentioned in this bill?

Dr. SMITH. My opinion, Senator, is that these different metals present, each of them, a somewhat different problem, and for that reason more and larger powers must be asked to handle the whole situation than if we were considering simply manganese or simply tungsten or simply any one ore. In some cases I think the administrative officer would use one system and in another case another

system. As I said about price fixing, I do not think he would use the same method for each article enumerated in this bill. I think in some cases this system advocated by Mr. Taylor might be found very effective.

The CHAIRMAN. Now, Dr. Smith, right there, in case a plan of that kind would be deemed advisable, do you think that if this committee would consider the creation of a war minerals corporation, something like the War Finance Corporation, whereby powers were given to the board of directors of the war minerals corporation to carry out the objects and purposes just expressed by Senator Shafroth and yourself, that would be a good thing?

Dr. SMITH. I think that would accomplish it. It would accomplish much that is desired in connection with this legislation. I would hesitate to say that it would accomplish everything.

The CHAIRMAN. This thought has been running in my mind in this connection. It would centralize the authority.

Dr. SMITH. That is what we want.

The CHAIRMAN. You would have a war minerals corporation to handle the entire situation and it would not be distributed in an indefinite way as it is to-day throughout the various boards and bureaus that exist in Washington.

Dr. SMITH. Not only that, but all of the powers that are now distributed in the way you suggest are insufficient. The sum total is less than is necessary to meet the situation.

The CHAIRMAN. But they wuold be centralized in this one body known as—this is only a suggestion on my part—the war minerals corporation, which would have authority to carry out the ideas and purposes just expressed by you and Senator Shafroth.

Dr. SMITH. Especially in such a metal as tin, which is largely a purchasing problem. It is a purchasing and allocation problem. I think such a corporation could meet the situation exactly. Whether it could in all the other subjects is somewhat of a question.

The CHAIRMAN. What would be the difference between tin and, say, pyrites?

Dr. SMITH. In the case of pyrites, which has been discussed by, I think, Mr. Wells, who is more familiar with the subject than I am, it seems to me that the problem is largely one of stimulating domestic production. I think that that could be brought about by stabilizing the industry and giving some certainty of return to the producer by price fixing.

The CHAIRMAN. Take a case of this kind: You find that there are two or three of the metals that need stimulating in order to get the production. Now, all the other metals are being produced in sufficient quantities to supply the needs. Therefore you do not need to do anything to stimulate their production. If, however, later on you find that it is necessary, under such an act, you could take it up and handle it. Take the pyrites. What we want is immediate production. Under the war minerals corporation you can go right to the mine that has it in sight and make an arrangement for immediate production. It would save time, it seems to me. We have not time now to send prospectors all over the country looking for it. You know where there are known deposits and you want to see if you can operate these mines and get production from them.

Dr. SMITH. These can be operated at a price. It will be the function of an administrative officer to find out not only what price is necessary to bring out the necessary tonnage, but what price under the existing price for sulphuric acid the acid maker can reasonably pay.

The statement was made yesterday by Mr. Grasselli, an acid maker, that he was paying 25 to 50 cents more for a certain grade of Illinois pyrite than he was two years ago. At the same time, I have information that the producer with whom he has contracts is actually paying 50 cents more a ton for his labor, so that you see that increase is not sufficient to bring out any added tonnage of pyrite, and the question might well be raised whether it is, as compared with the price, the prevailing price, for foreign pyrite, and whether the price offered for these coal brasses is a fair price, that is, whether it is an adequate price as compared with the price that the acid maker is receiving for his product. Now, if the Government had some one in authority, representing, not as the consumer does, one side only of the problem, but some one representing both sides—both the consumer and the producer—to determine the justness of this or that price, it seems to me that we might stimulate production. Whether immediately to an adequate extent or not, I can no say, but we could increase the output immediately by stabilizing the industry and letting the producer know what he can get for his output the next year.

A corporation such as you have suggested would do this by contracting with the producers for large quantities of the ore and furnishing such raw materials to the consumers.

The CHAIRMAN. This corporation would have the power to allocate these metals. It would be a sort of distributing agency, and the entire power in all these matters would be centralized in one body.

Dr. SMITH. Of course such a corporation might have the advantage of paying different prices for the same material in different places, and then of equalizing or averaging the cost to the consumer. Of course there would be some administrative difficulties connected with that. We would not expect and we should not expect, it seems to me, to attain any ideal in this matter of equalizing opportunities for profit. Every ore deposit is different from every other one.

The CHAIRMAN. The idea of this bill, as I understand it, is to meet an emergency.

Dr. SMITH. To get out the tonnage.

The CHAIRMAN. To get out the tonnage just as quickly as you can.

Dr. SMITH. That is the purpose. The primary purpose, I think, and the methods suggested in the language of the bill are means to that end.

One of the criticisms of the proposed legislation has shown by frequent references to the expense involved in stimulating output by means of fixing minimum prices. I think that whatever it costs must be considered in terms of the needs of the Nation. If we must keep up our acid supply and if we must keep up our steel production the matter of a few cents per unit of pyrite or a few cents per unit of manganese ore is of little importance. I think you and I agreed at an earlier session of these hearings that the last ton of steel or the

last ton of acid may be what will win the battle and the war. We can afford to pay what under other conditions would seem an extravagant price for the material that will enable the industry to turn out the 100 per cent of steel and 100 per cent of acid needed.

As you have just suggested, Mr. Chairman, we think of this as a time of emergency. I believe that the laws of supply and demand that have been mentioned so many times in this hearing are not put to one side during the period of the war, but the purpose of this legislation is really to help out the law of supply and demand under present conditions.

The CHAIRMAN. For the reason that the law of supply and demand might not afford the quick relief that is needed under present conditions.

Dr. SMITH. I think we may find that some of the needs that we now think of as a war measure and simply in terms of war emergency are not necessarily opposed to good economics, and that after the war some of these same methods will continue. We will have a different system, but, of course, the thing of first importance just now is to keep the industrial machine running at highest efficiency during the war.

I wish to see the Government put in the position of taking the initiative in the matter of helping out the industry, and I believe to that end the more power given under this legislation the more hearty will be the cooperation between the Government and the industry itself, and we will be working more promptly in this matter of stabilizing each of these industries so that they will produce what is required.

As I said a moment ago, some of the methods that may be evolved under this situation will be found to be so good in effect that they will be continued after the war, even after this legislation expires by the terms of its enactment. Of course, this reform will then not be, as some people intimate, autocratic; it will become truly democratic; it will be adopted by all.

The suggestion has been made to the committee that what the country needs at this time, from the governmental agencies, is advisory action, rather than the kind of contral that is proposed in the bill before you. For some time, for several years, there has been a lot of advice freely given; but it has seemed for the past six months or more that free advice needs to have something of authority behind it in order to make it effective. The situation that we are now facing it not an unforeseen situation. Many of the elements in the present crisis were foresfeen, as I think I mentioned in the discussion the other day, when one of the representatives of the steel industry was testifying. Some of the conditions were foreseen at the very beginning of the European war. We saw that international commerce might follow new channels; that it must be an interrupted commerce as compared with the free intercourse of other years, and that would mean, and must necessarily bring about, a larger dependence on home products. In a governmental publication, as far back as September, 1914, attention was called to the needs of developing the domestic supply of manganese, of chromite, and of pyrite, so that this 1918 situation is not a new and unforeseen one. I say that simply to emphasize the fact that this policy of governmental ad-

vice has been followed up to now for three or four years, and it has not brought the results that are needed. We need something to back up the advice.

The CHAIRMAN. Why?

Dr. SMITH. I think that in the discussion of the steel practice—the larger utilization of low-grade manganese ores through their conversion into spiegel, thus relieving the drain upon the more limited supplies of high-grade manganese ore—it was brought out that this reform or improved practice had been initiated only in the past few weeks. That is largely a metallurgical problem with which the Bureau of Mines has been working, not for a few weeks, but for months, if not for years, and yet the industry has only just now paid heed to the necessity, or realized the necessity of the improved practice when the Shipping Board put a limitation upon the importation of high-grade manganese ore. That need, I think, was foreseen by governmental agencies, and the change in practice was advocated, and yet that advice, so freely given, did not have authority back of it. I think if this measure, that is now under consideration, had been passed a year ago, the improved practice in the steel metallurgy would have come that much sooner. That is simply one of the examples. I think a somewhat similar statement could be made with regard to some of the other products.

Another criticism that has been made of the proposed contral—governmental control—is that such interference with the law of supply and demand would be arbitrary and artificial. Those are terms that are commonly applied to governmental action; yet, in my opinion, the same adjectives can be applied to action under the old régime of contractual relations. The market on some of these raw materials has not been a free market, but it has been controlled by a division of the market, for instance, among a few consumers.

I think that such allocation is no less arbitrary when it is performed by the consumers than when it is performed by a governmental agency, or you might say that the fixing of prices suggested at the present time by the ferro-alloys committee, which seems to me at first glance a very fair scale of prices, is just as arbitrary as if they were fixed by a strictly governmental committee or by a committee representing the producers of manganese ore. The type of action is much the same; it is something that is superimposed upon what has been called the free, unrestricted action of supply and demand. I think it is a good move, but I also believe that such fixing of prices by a committee made up wholly of consumers is only half of what ought to be done; there should be representation of the producers as well as of the consumers. I think such a consumers' committee is a necessary part of the general machinery, but it is only a part. This case of a committee representing the consumers wholly is only one case. The same is true with graphite, where a graphite association has been formed. The plumbago Graphite Association is one, as I understand it, made up solely of importers, and the domestic producers have their own association. It seems to me equally essential that the Alabama Producers' Association should be heard on the subject of fixing prices as well as the Plumbago Association representing the importers. The committees, which are truly representative committees under the Chemical Alliance, are for the most part composed of representatives of the consumers of these raw materials. Any governmental agency should

give equal attention and emphasis to the producers' side. I think, under such administration as is provided for in this legislation, that side would be fully represented.

It has seemed to me apparent in listening to the different witnesses that it is the producers, especially the small producers, who are asking for governmental control. The different witnesses have brought out different points in that connection. There has been evidence showing that the producers wish control in such cases where the price offered for domestic ore is less than that for imported ore. Another case is where, in the light of increased need of domestic production, a smaller price is offered at the present time than has been offered in the past. That was illustrated by the testimony here in connection with graphite. Another case would be where the producer asked for control because the price offered for raw material is not believed to be fair as compared with the prevailing prices for the derivatives. There was the same evidence brought to our attention in connection with pyrite, tungsten, and chromite. There seems to be a feeling on the part of especially the small producer that the gap is too large between the raw material and the product derived therefrom. One witness also brought out the fact of the need of control because he believed that the market for his product was not a free market. That was in the case of tungsten. Generally there has been evidence that control is desired because no contract can be made for a sufficient period to insure either new developments or an increased addition to already existing plants. That came out in the case of several of these mineral products, and I think it is the idea that is at the bottom of much of the lack of increased output. There is no assurance of a market for a sufficient period to justify expenditure of capital. Too often we make the mistake of considering that the nongovernmental use of some of this raw material is a nonessential use; but if we think for a moment, there are many of the nongovernmental uses that are equally essential at the present time, so that there is need of price fixing not only as a basis for Government contract but also to supply other consumers, not for nonessential work but for work that is essential, because indirectly it may be for the Government, although several steps removed from the product used by the Government.

I might sum up my position with reference to the bill before us by saying that no one is more anxious than I am for as little interference as possible with existing conditions in these various industries, and it is for that reason that I wish for governmental control that will involve the least possible new machinery and the least amount of change in present commercial and industrial practices; but when I say that, I want to add most emphatically that I believe added power is needed—power to change existing procedure wherever and whenever we realize that procedure does not meet the present crisis and where it does not provide for fair treatment to every producer or consumer.

I know that the efforts on the part of the governmental agencies already at work have been to serve the interests of the producer and to serve equally the interests of the consumer. They are equally important parts of the industrial machinery of the Nation, and it is a part of the Federal officer's duty to offer his services to both.

Recent experience with regard to many of these subjects justifies us in believing that new needs may arise very suddenly, and wise foresight would provide wide powers, even though we do not see the need of exercising those powers in the case of each and every one of the mineral products that are specified in the bill. I believe that in the effort to carry out the provisions of this bill by any administrative organization only such part of these powers granted under this legislation would be exercised as might be demanded by the emergency when it arose. The situation we know to-day is quite different from what it was six months ago as to several of the mineral products.

The CHAIRMAN. Just explain what these differences are and in what products.

Dr. SMITH. We are sympathetic with the consumers of pyrite and manganese ore, for instance, in their what seems to us rather tardy change of practice by reason of the fact that this was forced upon them by the seemingly stringent administrative act of the Shipping Board, for which, however, there was absolute necessity. All who have studied this problem have not been able to foresee exactly how great the demand would be upon our resources of raw material. It is not simply that the foreign supply of pyrite and of chromite and of manganese has been shut off in part, but the consumption of these materials has increased, so that the burden placed upon the domestic supply is larger than anyone anticipated. On the other hand, I think that the manganese production is increasing rather more rapidly than many thought could be possible in this country.

In those particulars it is true of all of us that our hindsight is better than our foresight, for, even though we realized that there would be some shortage, we could not see and we can not even now foresee what the shortage may be in sulphuric acid. That is dependent absolutely upon the military demand, and there may be at any time a large demand upon one of these materials that forms the basis for some chemical manufacture that will arise by reason of the discovery of a new gas that is needed at the front, or some other material that is needed at the front.

If we compare present-day consumption of many of these mineral products with the consumption in 1913 and 1914, we are convinced at once that the extent of our necessity could not be foreseen at that time. There are some materials that have increased in importance in this respect and others that have decreased.

Take the case of magnesite, of which we expected there would be a decided shortage by reason of the questionable adequacy of the California supply to take the place of that that had been imported from Greece and Austria. That California supply was very largely augmented by the discovery in Washington of large deposits of magnesite in 1915, so that in 1917, as has been testified by some of the witnesses here representing the steel industry, they are satisfied with the domestic supply of magnesite for refractory uses.

I would also like to put some emphasis upon what I regard as the stabilizing influence of control. I think, with this power given to the Government, there would be much less chance of the market going against the ore buyer or the refiner. At least, you could say that the chance of a runaway market would not be greater under Government

control than it is at present, and that the stabilizing effect would be equally as beneficial to the consumer of these products as to the producer.

I was interested when one of the purchasing agents made the statement that he would prefer, other needs being equal, a domestic supply of his ore, not simply during war times but after the war. He said he would feel safer the nearer his supply was to his works.

In regard to the details of the legislation, I do not know that I can add anything to what has been or will be said. I think if there is to be this stabilizing influence of the Government, whether that is exercised through a corporation or through the machinery provided in the House bill, there is need of a revolving fund, and I think such a revolving fund should be larger than the amount in the House bill. I have roughly estimated the amount involved in the annual turnover of some of these products, the more important of these minerals mentioned in the bill; that is, taking the value of the imports and of the domestic production and the amount would be something in excess of $170,000,000. Of course, with a revolving fund that might be said to represent the maximum that would be needed; but in view of the fact that some of these imported ores come from some distance and then would be needed some time to finance the operation and the handling of the product from point of production to point of consumption, there could not be many turnovers of the capital inside of the 12 months, but I think that the amount stated in the House bill is quite inadequate as compared with what might be necessitated in case of need. Of course, whatever amount is appropriated it would be expected that before the period covered by the legislation expired most of that would be returned to the Treasury.

The same criticism has been made of the provision which looks toward the possibility of Government operation in special cases where a mine is in litigation or where, by reason of ultraconservative ownership, or, we might even think, alien ownership, the property does not respond to the present needs for working. I think giving the Government power to operate and take over such a mine is amply justified by the needs as we see them even now. I do not anticipate that there would be a large amount of Government operation under such authority, but I do think that if the Government had power to do this there would be some cases in which the owner of the property would be more responsive to the suggestion that his property be operated at once.

The CHAIRMAN. I notice, Dr. Smith, that there are some ores and metals not covered by this. Yesterday there was some discussion as to zinc. Why is it that zinc ore is not mentioned in this bill?

Dr. SMITH. Well, I have supposed that the primary reason was that the zinc production is absolutely adequate to meet all the needs. Of course, the mining and smelting and refining of these major metals has not been adequate to meet every demand possibly during the past four years, but they have increased their production capacity very largely indeed, and I think that we can say that they have not only met the domestic demands, but they have come up to meeting the very large foreign demand as well as could be expected. For that reason they do not present at all the kind of problem that is presented in the

case of some of the minor minerals which are of minor importance because the tonnage available is so much less in amount.

The CHAIRMAN. There is a sufficient production in this country and also sufficient zinc ore to take care of the needs and requirements that one can conceive of?

Dr. SMITH. And that production is, I think, something like 25 per cent in excess of anything like we had before in any previous time.

In the case of copper, the increase, I think, has been something like 60 or 65 per cent between 1913 and 1916, which was the high-mark year. The problem in these major metals is quite different, and yet we can not consider some of those other metals as less important, because, as I said earlier, they are, in a way, the key materials upon which other industries depend to an extent very much larger than would be suggested by the small tonnage which has been discussed.

Now, I have not mentioned the shipping problem, but I think it is in the minds of all of us that it is the shipping crisis that really necessitates the consideration of legislation like this.

Simply as showing the connection between the shipping crisis, and the minerals under consideration here, Mr. Bastin has furnished me with a table for about 10 of the mineral products mentioned in the bill. As expressing the tonnage problem involved, the normal import of these would be in terms of the requirements of this country for 1918, roughly, 2,000,000 tons. Now, so far as allotments have been made for imports or licenses issued for imports in 1918, the corresponding total is only 1,000,000. Just taking those substances—clay, chalk, chromium, fullers' earth, graphite, grinding pebbles, manganese, sea salt, and pyrite—which are items of large tonnage, the present problem is to stimulate the present production, so as to meet this shortage of 1,000,000 tons, which is brought about by the restriction already put upon the imports by the action of the Shipping Board. Of course, there are other items that I have not mentioned that are very important, although they do not involve a comparable tonnage.

Mr. BASTIN. Would it be, in your estimation, possible to effect an immediate further saving in the other remaining million?

Dr. SMITH. Of course, that is just what we are trying to do in the case of the largest item, which is manganese. We are trying not only to replace this high-grade manganese with domestic manganese of the same grade, but we are also trying to substitute, with the cooperation of the metallurgists of the steel industry, a lower grade manganese for some of the higher grades. I think Mr. Bastin's suggestion is that we would not want to let this one million saving in tonnage represent all that can be done or all that should be done, but that is the situation as it presents itself in May, 1918. Again, two months later, the problem may be quite different. There may be even a greater need for cutting off tonnage.

The CHAIRMAN. If there is nothing further at this time we will adjourn until 10 o'clock to-morrow morning.

(Thereupon, at 11.45 o'clock a. m., the committee adjourned until to-morrow, Wednesday, May 22, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

**WEDNESDAY, MAY 22, 1918.**

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met at 10 o'clock a. m., Senator Charles B. Henderson (chairman) presiding.

Present: Senators Jones and Baird.

The CHAIRMAN. We will hear from Mr. McMahon this morning.

## STATEMENT OF MR. H. G. M'MAHON, OF GOLDFIELD, NEV.

Mr. MCMAHON. Mr. Chairman, in view of the proposed measure that I understand has been brought before you to create an organization to assist in the development of certain metals that are required for this war, I understand that a great deal of attention has been given to the pyrite deposits; that is, to the end that the known deposits be utilized to their greatest extent and a certain amount of development be given to new fields.

It would appear in this connection that a certain amount of interest should be directed to the conservation of sulphur that is now escaping in very large quantities at many of the western smelting plants at points where the utilization of this sulphur, as it comes off in the shape of sulphur dioxide gas, may not be available for the manufacture of sulphuric acid.

I wish to make the proposal that a large part of this sulphur gas should be made directly into elemental sulphur or brimstone. It is a well-known fact that the deposits in the far West are well developed and smelters are now in operation that can be depended upon as a source of sulphur for a considerable length of time.

The CHAIRMAN. Where are the deposits?

Mr. MCMAHON. In Shasta County, Cal. For instance, the plant of the Mammoth Smelter is smelting nearly 2,000 tons of sulphide per day and it should be stated that this ore should run 30 per cent of sulphur. That, I understand, is being wasted at the present time. At other points in California a certain amount of smelting is being done, notably on San Francisco Bay. There are points in Arizona, Utah, and Montana where very large tonnages of sulphur are being thrown out in the shape of sulphur dioxide, and to a large extent this is going to waste. From a commercial standpoint, to say nothing of a war measure, some effort should be brought about to conserve this product.

I understand that so far as the eastern situation is concerned, an effort is being made, or will be made, to utilize these fumes for the

manufacture of sulphuric acid. It may be the case, however, that in the far West this would not prove to be practicable, owing to transportation facilities. On the other hand, if this sulphur-dioxide gas was broken down into elemental sulphur or brimstone it could be shipped east to any point desirable in ordinary cars, and not alone would the tonnage be about one-third of the tonnage that would be required for the shipment of sulphuric acid but without doubt the freight rates on brimstone would be much less than that on sulphuric acid.

The CHAIRMAN. Are you engaged in the production of pyrites?

Mr. MCMAHON. No, I am not.

The CHAIRMAN. You are not?

Mr. MCMAHON. No. My connection with this matter is solely due to the fact that for the past seven or eight years others, as well as myself, have been studying the fume question. We have developed a method whereby sulphur-dioxide gas can be broken down into elemental sulphur.

The CHAIRMAN. What is the business that you are engaged in at the present time?

Mr. MCMAHON. The mining business.

The CHAIRMAN. You have been engaged in that business for some years?

Mr. MCMAHON. We started experimental work in about 1911, and we have carried on the work quite constantly. We have done a great deal of laboratory and field work and got the best service we could get in this connection.

I do not believe that waste sulphur gases were utilized before in the manufacture of sulphur direct, and the pyrite deposits that are now being developed, while they can be utilized for the manufacture of sulphuric acid, will not be available for the manufacture of brimstone, unless some method is applied, such as we have worked out.

The CHAIRMAN. Have you gone over your method with the Bureau of Mines and the United States Geological Survey?

Mr. MCMAHON. We have gone over the method very thoroughly with the Bureau of Mines, and Mr. Wells, who is here, made a complete study of the situation from a technical standpoint as well as a practical standpoint.

I believe perhaps a year was consumed in that study, with the result that an official bulletin was gotten out by the Department. In this bulletin it is stated that sulphur can be manufactured from these waste gasses at a price that is well below what sulphur was selling for prior to the war. Our present status is that outside of a great deal of laboratory and field work there is no operating plant. We have found difficulty in bringing about a situation where we could build an operating plant, owing to the fact that we have no control of the source of the waste gases. Waste gas, of course, is owned by the smelting companies. We have had considerable difficulty in negotiating any kind of a deal along satisfactory lines that would permit us to conservatively finance an enterprise of this kind.

The CHAIRMAN. Do you think that a bill of this kind would in any way tend to assist you in that matter?

Mr. MCMAHON. I believe it would, and that is the reason I came before the committee.

The CHAIRMAN. Will you explain in what way it would assist you?

Mr. McMAHON. I believe if an organization were created that would tend to help production of the different metals mentioned in the bill, and if we were to offer to the Government, free of any charge, this method which we have worked out in a practical as well as a technical way, it might offer possibilities to the Government, with its organization and funds, that would justify adoping the method and taking over what we have, or building plants and operating them during the period of the war.

The CHAIRMAN. Where are these plants that you refer to?

Mr. McMAHON. I said a minute ago that we have no plants. I stated that if a bill of this kind were put through, which had an organization and financial backing to take hold of a thing like this, that we would gladly turn it over to the Government on any terms satisfactory to the Government and allow them to use it as it chose.

The CHAIRMAN. You refer to the process that you have been working on for some time?

Mr. McMAHON. Yes.

The CHAIRMAN. Have you given any thought or consideration to the bill now before this committee?

Mr. McMAHON. Very little.

The CHAIRMAN. Very little, you say?

Mr. McMAHON. Yes.

The CHAIRMAN. Are there any questions?

Dr. MANNING. I would like to ask Mr. McMahon in what form he would ship the material under his process from Salt Lake City or Anaconda, where a large amount of gas is being wasted in the air.

Mr. McMAHON. We would ship as either lump sulphur or flowers of sulphur, or in any way that might be desired.

Dr. MANNING. Ship it in open cars?

Mr. McMAHON. Ship it in open cars.

Dr. MANNING. Sulphuric acid has to come in containers.

Mr. McMAHON. Yes, sir. Of course this would cut down the tonnage materially over sulphuric acid, as you require a third of a ton of sulphur to make a ton of acid; also the freight rate would be cheaper.

The CHAIRMAN. Are these plants that you refer to operating now?

Mr. McMAHON. The smelting plants?

The CHAIRMAN. Yes.

Mr. McMAHON. Yes.

Dr. MANNING. I would like to ask if this process could be applied to the lead smelters?

Mr. McMAHON. It could if the sulphur dioxide gas were of sufficient concentration.

Mr. Chairman, the idea is this: While a great deal of thought is being put along the lines of developing new pyrite deposits and stimulating production, I believe that some attention should be given to the concentration of the sulphur that is now going to waste. I believe that the Government should go into that phase of it, and if the Government does go into that phase of it they will find a source that may become very valuable.

The CHAIRMAN. Do you refer to the same plan that is being carried out by the copper smelters?

Mr. McMAHON. The copper swelters are throwing off this gas; in some cases they are making sulphur dioxide gas. In this case the gas would be turned directly into the elemental sulphur and could be shipped to any point desired.

Dr. MANNING. I would say that the Cottrell and Thiogen processes are for the purpose of utilizing waste gas that is going out of the smokestacks of the smelters and is very injurious to life and property.

The CHAIRMAN. Mr. Wells, you have a statement to make to the committee before you leave in regard to the testimony given by Mr. McMahon?

Mr. WELLS. Yes, sir.

## STATEMENT OF MR. A. E. WELLS.

The CHAIRMAN. Mr. Wells, you have already testified before this committee?

Mr. WELLS. Yes, sir. During the last seven or eight years, or the last four or five years the Bureau of Mines has been interested in a great number of investigations carried on with regard to methods for recovering materials that were going to waste in the atmosphere from the smelters, both solid elements, which contain valuable materials, and the gaseous elements which might be made into valuable products. The work has been primarily directed to the recovery of waste and also toward a reduction of the amount of damage that might be done around the smelters by reason of the emission of these substances. The Cottrell apparatus is aimed primarily at the recovery of solid materials. We have carried on investigations of the Thiogen process and the so-called Hall process, which were aimed at the recovery of sulphur from sulphur dioxide gas.

The Bureau of Mines carried out quite an elaborate investigation as to this thiogen process in 1915 and determined that technically the process was sound; that it was possible to take the waste sulphur gases in smelter smoke and reduce these gases to elemental sulphur, just as pure as any sulphur that could be obtained from the deposits in the South. At the time that we carried out the laboratory investigations, it was hoped that some company would take up the process and at least go ahead to the extent of putting up a commercial unit. That condition has never yet been brought about, so that we have not yet determined accurately the probable cost of the manufacture of sulphur by the treatment of smelter gases. However, the indications from our experiments have been that sulphur can be obtained in that manner at a cost in the neighborhood of $10 to $13 per ton.

In studying the raw-material situation that we are facing now in the manufacture of sulphuric acid, I have considered that in an emergency, as a war measure, this process, or a similar process, might be used for the production of sulphur from waste smelter gas. I said "similar processes." The thiogen process is the only process for the recovery of sulphur from waste gases that the Bureau of Mines has actually investigated. Other processes have been suggested and have been tried out, but not by us. The other processes are aimed at getting the sulphur from the ores before the sulphur is roasted.

I have felt that not only can the process be utilized as a war measure for obtaining sulphur for the manufacture of sulphuric acid, but there is even a possibility of the process being used in a commercial way after the war.

In the testimony that has gone before, I mentioned the fact that we considered making acid from the waste gases in the West and shipping the acid to the east, but we had always run into the difficulty of transporting any large tonnage of the acid. Great tonnages of sulphur are being wasted in the atmosphere daily at Anaconda, Mont., and Garfield, Utah. They are smelting plants from which sulphur could be obtained and shipped back to the acid manufacturing plants in the East.

At the present stage of the development of the thiogen process, it is rather difficult, apparently, to get the large companies to go ahead and put up a plant. The work has been carried on so far only on a laboratory scale, and what is necessary as the next step is for someone to put up a plant which will demonstrate the process on a larger scale than has been done. My feeling has been that it is necessary to probably put up a 10-ton plant, a plant to produce 10 tons of sulphur per day, in order to demonstrate the cost and really establish the process as a commercial possibility.

Senator JONES. What would such a unit cost?

Mr. WELLS. In 1915 we figured that a unit of that size would cost $40,000, with the accessories that might be involved. I believe at the present time that would probably cost $60,000 to start that size unit.

The CHAIRMAN. Are there any particular points that you wish to go into, Mr. McMahon?

Mr. MCMAHON. There are none, Mr. Chairman. I simply wanted to bring this matter before the committee as a possibility while consideration was being given to the pyrite deposits.

Mr. WELLS. We are interested in all these processes that look toward getting raw material for acid manufacture and the recovery of waste. We have considered, as I have said before, that we can, if necessary, at a cost which I do not know at the present time, but which I hope to have in some way determined in the course of a few months, obtain a large amount of brimstone from the smelters of the country, which will be available for the manufacture of sulphuric acid. The prospect along this line is one of several that we are investigating. We are working along other lines also. For example, up until recently the idea of making sulphuric acid out of pyrrhotite ores has not received much encouragement. Only one company in the United States has tried to do it, and they succeeded in doing it only after considerable experimentation. However, it has been demonstrated that it can be done. At the present time the Bureau of Mines has sent two men into the field to work up for the War Department estimates of the cost and the time required for the erection of acid plants in connection with these pyrrhotite ores in order to supply the munitions plants with acids.

As I stated in my previous testimony, we have got to work on every line that is possible in order to conserve our brimstone deposits and our brimstone reserve in the South. This project of trying to work up pyrrhotite ores is one of them. This project of making sulphuric acid from waste gases is another.

Senator JONES of New Mexico. How far have you gone with the pyrrhotite ores?

Mr. WELLS. So far, Senator, we have made a survey. We have determined what has been done at various plants through the utilization of pyrrhotite and have concluded that there is no reason why pyrrhotite ores can not be used, provided that burners that are built are equipped to burn pyrrhotite. Men are now in the field to go over all the pyrrhotite deposits in the East and to determine which properties can be opened up most readily and cheaply and which are most available to transportation facilities and where acid plants can be built in connection with them under the most favorable conditions. This is being done at the request of the War Industries Board.

Mr. MCMAHON. I wish to bring out the point that while all this work is going on in regard to the pyrrhotite deposits and pyrite deposits, some greater measure of attention should be given to the matter of the recovery of sulphur from waste gases in the West. The deposits out West are very extensive and the gas is going off in a shape so that it could be easily treated after a practical demonstration of our method has been brought about.

Taking the Government's viewpoint, only a very reasonable sum of money would show or demonstrate whether these gases are available as sources of sulphur supply. If it appears to be the fact, then a great source of supply is at hand. While we have every confidence in the outcome of the pyrrhotite experiments, I do not believe that this is any time to overlook any other source or prospect. It is not as if the experiments along this line would be very expensive. Even though the first experiments prove to be successful, the construction of larger units such as would be capable of producing a thousand tons a day would not be very expensive.

Dr. SMITH. I would like to ask Mr. Wells if that is not a promising field of investigation?

Mr. WELLS. Yes.

Dr. SMITH. Is it along the line that the Bureau of Mines is working in the possible substitution of pyrrhotite ores for sulphur in connection with the sulphide process in pulp making? The reason for asking this is that it happens that the pulp mills in New England, which are far removed from the sulphur deposits of the country, are large users of the sulphur, whereas there are in the east, and especially in the northeast, rather large deposits of pyrrhotite, so that the possible substitution of that for the pure sulphur, if practicable, would have a large importance to the Nation.

Mr. WELLS. What Dr. Smith states in regard to the possibility of using pyrrhotite in paper pulp coincides with my views of the situation. These paper-pulp mills are not equipped with the burners required to burn pyrrhotite, but they could be so equipped.

Senator JONES. Would it require any great outlay of funds?

Mr. WELLS. In comparison with the outlay required to burn brimstone, the outlay required to burn pyrrhotite is quite considerable. I hesitate to give figures to go into the record, but to burn 10 tons of sulphur per day from pyrrhotite would require an investment in pyrrhotite burners amounting to about $30,000 as against less than $3,000 or $3,500 for the sulphur burners.

Senator JONES. What would be the difference, if any, in the cost of using the pyrrhotite instead of the sulphur?

Mr. WELLS. The actual factory cost would probably be a little larger. Dr. Smith's suggestion that the New England paper-pulp mills use pyrrhotite rather than brimstone would result in a lower cost, because they would get pyrrhotite at a lower cost per unit of sulphur than they now pay for brimstone.

Senator JONES. Then it might be financially advantageous to those mills to change?

Mr. WELLS. It might be; yes, sir. It is well within the bounds of possibility, if this war lasts three or four years, that they will be required to do it, if we have to have brimstone for munitions.

Senator JONES. I understand about the brimstone made of pure sulphur. I know what sort of a commodity that is, but I do not know in just what form pyrrhotite could be used.

Mr. WELLS. In the same way you use pyrite. It is a form of iron sulphide containing less sulphur in proportion to the iron than pyrite. The good pyrite ore will contain as high as 50 per cent sulphur. Pyrrhotite ore very seldom will go above 33 or 34 per cent, and generally it does not go above 30 per cent sulphur.

Senator JONES. Where can pyrrhotite ores be obtained?

Mr. WELLS. The deposits that I know of are in Maine. There are sulphur deposits in Virginia and Tennessee.

The CHAIRMAN. Are those large deposits?

Mr. WELLS. Yes, sir.

Senator JONES. In making acid of the pyrrhotite ores, would you first procure the sulphur content of the ores, or would you use the ore without first extracting the sulphur content?

Mr. WELLS. You would use the ore straight—just put it into a pyrrhotite burner and allow it to burn.

Senator JONES. You spoke of the excessive cost of transporting sulphuric acid from the West?

Mr. WELLS. Yes, sir.

Senator JONES. How would that tonnage and expense of transportation of the acid compare with the transportation of the sulphur?

Mr. WELLS. We might make in the West and ship what is known as 20 per cent olean, 20 per cent fuming sulphuric acid. That is the trade name. It is concentrated acid. Now, we would have to ship 2½ tons of that as against 1 ton of brimstone. From 1 ton of brimstone you can make 2½ tons of this fuming acid.

Senator JONES. The concentrated acid?

Mr. WELLS. Yes, sir.

Senator JONES. How many tons of commercial acid would 1 ton of the concentrated acid make?

Mr. WELLS. One ton of the concentrated acid would make—you refer to 60 Baumé?

Senator JONES. Acid in the form in which it is generally used. I do not know its technical strength.

Mr. WELLS. The greatest consumption of acid is in the form of 60 Baumé acid. That is 78 per cent. We would have to ship about 1 ton of this fuming acid to make about 1⅓ of the 60 Baumé acid, which is the grade that is mostly used.

Senator JONES. Then there is not a great saving in concentrating it?

Mr. WELLS. You save one-third.

Senator JONES. Yes; about one-third.

Mr. McMAHON. There would be a great saving in the tonnage over shipping brimstone and even over concentrated acid. It would be about 2½ to 1, and the freight rates on the acid would be higher than on brimstone.

Mr. WELLS. Yes.

Mr. McMAHON. And it would be necessary to have special equipment for the acid as against ordinary equipment for the brimstone?

Mr. WELLS. Yes.

Mr. McMAHON. I understand from hearsay and some printed reports that the outlook with regard to brimstone is not any too brilliant. While without doubt there are very considerable quantities of brimstone down in Louisiana and Texas, the utilization of the present fumes to create a greater supply would appear to be something very well worth while considering.

The CHAIRMAN. This sulphur supply is limited?

Mr. McMAHON. In the southern field they are quite limited.

The CHAIRMAN. They have been drawing heavily on them?

Mr. McMAHON. I understand they have. I would not want to venture an opinion as to how much sulphur there is. Those who are familiar with mining practice realize that there is always an end to any ordinary mine deposit. Whether or not these deposits will last any considerable time may be a question, but we do know that eventually they are going to work out.

Senator JONES of New Mexico. To what extent has that supply been prospected?

Mr. McMAHON. I would like to ask Mr. Wells to answer that, for he is better qualified to do so than I am.

Mr. WELLS. Do you refer to these two deposits?

Senator JONES of New Mexico. Yes.

Mr. WELLS. Last fall the Geological Survey and the Bureau of Mines sent a committee to these two deposits to make an investigation to determine the probable amount of sulphur that might be taken out of the ground. The reserve under the ground and the amount that might be taken out, and the rate at which the sulphur could be taken out of the ground, were things that were considered. That report was prepared by this committee and made available to the War Industries Board and the War Department. I think that committee made a very elaborate report.

Senator JONES of New Mexico. Has a copy of that been put into the record?

The CHAIRMAN. I do not believe it has.

Dr. MANNING. I will say, Mr. Chairman, that it was considered confidential, and it was thought best not to make it a part of a public record.

Senator JONES of New Mexico. How long will it probably take to establish a commercial plant for the recovery of sulphur from the smelter fumes?

Mr. WELLS. In order to answer that question properly I should have the experience of seeing a 10-ton unit built and operated, because we would be going from a laboratory scale of work to a large scale and to make estimates on that jump is rather a difficult proposition. But without laying too much stress and too much importance on the figures, I would say that a plant to make 100 tons of sulphur per day

by a combination of what is known as the wet-and-dry thiogen process would require seven or eight months.

Senator JONES of New Mexico. For a 10-ton unit?

Mr. WELLS. No; that would be a 100-ton unit. I think a 10-ton unit could be built in two months.

Senator JONES of New Mexico. What percentage of the requirements would that meet?

Mr. WELLS. The 100-ton unit?

Senator JONES of New Mexico. Yes.

Mr. WELLS. Well, those two brimstone deposits now are producing somewhere near the maximum tonnage, and we are using it all. We are using between 3,000 and 3,500 tons a day. The facts are, of course, that we can obtain readily a thousand tons a day from the smelter smoke.

Senator JONES. How many plants would have to be equipped in order to get a thousand tons a day?

Mr. WELLS. I believe I could select plants that would furnish that—two plants that could furnish that.

Senator JONES. I suppose that you refer to the two that you named a while ago?

Mr. WELLS. Yes.

Senator JONES. Is that the total quantity of sulphur which is escaping daily from those two plants?

Mr. WELLS. No, sir; there is more sulphur than that escaping, but it will be quite difficult to recover all the sulphur. The sulphur that is going to waste from the roasting department of the smelters could be recovered quite readily, but that which is going to waste from the smelting operations would be much more difficult to recover. From the converting operations more sulphur could be recovered. I would say that from the roasting and converting operations of those two we could get sulphur quite readily; from the smelting operations it would be more difficult.

Senator JONES. Mr. Wells, would you venture a figure as to the cost of one of those 100-ton plants?

Mr. WELLS. I believe a 100-ton unit or plant would cost somewhere between $400,000 and $500,000 at the present time.

Senator JONES. And to try to recover any considerable proportion of the total requirements in that way would require rather a large outlay, would it not?

Mr. WELLS. Yes, sir. That is just about what the sulphuric-acid plants would cost. One hundred tons of acid a day would cost in that neighborhood.

Mr. MCMAHON. Of course, those plants, after being constructed, would be available for quite a lengthy period.

Senator JONES. About what do you think the depreciation would be?

Mr. MCMAHON. I suppose the depreciation would run about the same order as the depreciation in sulphuric acid plants, but after the production was well along, the saving on the cost price of this product would well take care of the upkeep of the plant. If sulphur could be produced at $10 or $12 a ton through this method, that, of course, would be well below what the selling value of sulphur was before the war.

Senator JONES. The selling price before the war was about $18?

Mr. MCMAHON. $18 to $22, I understand, at New York. Of course, sulphur at the present time is selling well above that figure.

Senator JONES. I observe by the notation here it has gone up about 50 per cent in one year above the 1916 price.

Mr. MCMAHON. Yes. In regard to Mr. Wells's statement about the amount of sulphur to produce a thousand tons at two plants, that was not taking into consideration that that is the extreme amount that could be saved. There are a great many other plants throwing off sulphurous fumes which would be available for the manufacture of sulphur.

Senator JONES. What we are trying to get at here is some practicable solution of the problem which confronts us. At the present time we are importing very little sulphur and the domestic production has reached a point where we export some. I should judge that we do, because the production in this country exceeds the consumption at the present time, so that the question of shipping does not enter.

Mr. MCMAHON. I see.

Senator JONES. The question of ship tonnage does not enter into this problem at the present time.

Mr. MCMAHON. Is it a matter of fact that plans are now under consideration for burning brimstone for sulphuric-acid manufacture?

Senator JONES. We are trying to gather information on that point.

Mr. WELLS. At the present time the consumption of brimstone for all purposes is just about equal to the production of those two deposits. I doubt if there is a very large tonnage of brimstone going to foreign countries. Some is going to Canada to be made into acid and is also going into the paper-pulp industry in Canada, but my undersanding is that there is very little brimstone being exported to the allies across the water. There are now some plants coming in which will require brimstone this summer and fall. We have not yet begun to supply the Government's powder plant with brimstone and other plants are coming in so that before the end of this year the demands for brimstone will be greater than those two properties can possibly meet.

Senator JONES. Have you obtained an estimate from the War Industries Board or any other source as to the probable increased requirements?

Mr. WELLS. I have kept track right along and am making a report to the War Industries Board as to future probable requirements for brimstone. We are doing that very thing for the War Industries Board, finding out what the War Department has in view, how soon new acid plants will be required, and what they will have to use.

Senator JONES. Then you are gathering that information yourself?

Mr. WELLS. Yes, sir.

Senator JONES. What is the result of your investigation?

Mr. WELLS. As I said before, before the end of the year we would be requiring brimstone at a rate greater than those two properties can produce. By the end of this year we will be requiring far greater amounts. I will state it this way. Assume that no Spanish pyrites come in after October 1; assume that nothing is done to bring out more pyrites; assume that the pyrite situation remains as it is now.

Some people are getting out a little more, while others are having difficulty in maintaining the 1917 production. Assume those two things. Then we will be obliged to take brimstone and obliged to use brimstone at the rate of about 110,000 tons per month for acid alone. When you add about 35,000 tons per month, going into other chemical industries, it will make the total brimstone requirements by the end of the year about 145,000 tons per month. Now, the rate of production of those two brimstone deposits now in operation is only about 100,000 tons per month, so that we are going into our stocks at the rate of 45,000 tons per month. May I state it this way? Before the end of the year we will be using brimstone at the rate of from 200,000 to 300,000 tons per year more than we are producing. It will be between 200,000 and 300,000 tons.

Senator JONES. In other words, the requirements are going to be increased by about that much?

Mr. WELLS. Yes, sir.

Senator JONES. You have told us about how we can increase the production of sulphur by recovering it from the fumes of the smelters. How about the use of pyrite? Are the pyrite ores used now for the manufacture of sulphur, or are they used directly in the production of sulphuric acid?

Mr. WELLS. Directly in the production of sulphuric acid.

Senator JONES. How does the cost of the sulphuric acid manufactured from pyrite ore compare with the production from the sulphur?

Mr. WELLS. You mean aside from the cost of the raw materials, or including that?

Senator JONES. Including that.

Mr. WELLS. At the present time the cost of the raw material is possibly a little greater when using pyrite than when using brimstone and the cost of manufacturing is a little greater when using pyrite than when using brimstone. It might make a difference of $2 a ton of acid.

Senator JONES. How much of the pyrite ores, or what quantity of pyrite ores, are we importing?

Mr. WELLS. Last year, I believe, about 800,000 long tons of pyrite. You refer both to the Canadian and Spanish imports—all imports?

Senator JONES. I am speaking of the United States alone.

Mr. WELLS. I mean, are you referring to Spanish ore imports?

Senator JONES. Wherever they come from.

Mr. WELLS. The Geological Survey has those figures exactly, 967,000 long tons of imports, 1917, of which 77 per cent came from Spain and 23 per cent from Canada.

Senator JONES. How many tons came from Spain?

Mr. WELLS. There were 967,000 long tons of imports in 1917.

Mr. WHITE. That dropped off, Senator Jones, from 1,250,000 tons the year before.

Senator JONES. You said 967,000, did you?

Mr. WELLS. Yes, sir; long tons. This year we will probably get from Spain in the neighborhood of 270,000 tons and from Canada around 300,000 tons.

Senator JONES. What percentage of the sulphuric acid is made from sulphur and from pyrite?

Mr. WELLS. At the present time?

Senator JONES. Yes.

Mr. WELLS. Just a moment until I get that lined up in my mind. I estimate at the present time 56 per cent of the sulphuric acid is being made from brimstone.

Senator POINDEXTER. What do you call brimstone?

Mr. WELLS. The elemental sulphur.

Senator JONES. Would it be better to develop the output of pyrite or to develop the recovery of this sulphur from the smelter fumes? As an economic proposition, which would be better?

Mr. WELLS. I will have to answer that question this way: We have to determine the comparative cost of developing the pyrite and the cost of getting the brimstone from the smelter smoke.

Senator JONES. I just wondered if you had already done that.

Mr. WELLS. No, sir; I have not. I stated, Senator Jones, that so far the work of getting sulphur from smelter smoke has been only on a small scale. It has been laboratory work. Until we do get some operating units from which we can get cost figures pretty definitely it is very difficult to estimate.

Senator JONES. Now, about the development of the domestic pyrite. What is the status of that industry now and what could be done or ought to be done to develop that further than has been done?

Mr. WELLS. At the present time it appears very doubtful whether the production of pyrite in this country in 1918 will be equal to that of 1917. The mine operators have had difficulty in getting a price for their pyrite which would allow them to go in on an extensive scale to increase their output. The acid manufacturer so far has been able to buy brimstone. He has no pressure put on him. There was no pressure brought to bear on the acid manufacturer to make him use pyrite rather than brimstone. He preferred to use brimstone rather than pyrite. The mine operators have labor difficulties. Certain extensive deposits in the South are not operating to their capacity because of labor troubles, and the mine operators are not getting what they figure they ought to get for the pyrite ore and are not prepared to pay the wages which would keep labor at their properties.

Senator POINDEXTER. Do they use white or black labor?

Mr. WELLS. In the South I think they are using black labor.

Senator JONES. Do I understand that the supply of pyrite ore is practically inexhaustible?

Mr. WELLS. No, sir; I do not understand that to be the case—that is, it depends upon what price you pay for pyrite.

Senator JONES. I mean the ore itself, in the ground.

Mr. WELLS. We undoubtedly have vast quantities in the ground.

Senator JONES. I see. It is simply a question, then, of getting it from the ground and making it commercially available.

Mr. WELLS. Yes, sir.

Senator JONES. What is necessary to be done now to increase that production?

Mr. WELLS. The necessary thing right now is for some powerful agency, probably the Government, to take a firm hand in the matter and determine what properties or what mines can be brought to produce the greatest amount of ore within a reasonable time and at a reasonable expense.

Senator JONES. Is there anything being done along that line now by the War Industries Board or any other activity that you know of?

Mr. WELLS. This is a sample of what is being done by the War Industries Board. A request comes in from some mine operator for help. He figures that if he spends $75,000 or $100,000 on his property he can double his output or triple his output. The War Industries Board gets into communication with the Chemical Alliance, which is an incorporated body of acid manufacturers, and says to them, "Now, gentlemen, here is this property down here that is turning out at the present time so much ore. If they can get $75,000 or $100,000, they can double their output. Can't you gentlemen step in there and finance this man and carry him forward and get out this increased output and use it?" The Chemical Alliance has never, up to the present time, acted on those suggestions, and the mine operator does not get encouragement.

Senator JONES. What is the Chemical Alliance?

Mr. WELLS. It is an incorporated body composed of the chemical manufacturers of the country. I think it was formed at the request of the War Industries Board as a body with whom they could deal and from whom they could get some information and advice concerning the conditions in the industry.

Senator JONES. Have you had any conferences with that Chemical Alliance or anybody representing it?

Mr. WELLS. Yes, sir.

Senator JONES. What did they have to say about the development of the pyrite?

Mr. WELLS. Substantially they say this: As long as we can get brimstone to run our plants we are not greatly interested in these pyrite deposits. We can buy brimstone at a figure which is so much lower than we would have to pay to bring out pyrite that we are not interested. As an example, we put up to the Chemical Alliance the matter of using some of the pyrites that could be obtained from coal brasses. Certain gentlemen in the chemical lines were very much in favor of helping us out and trying to get acid producers in certain districts to use pyrites obtained from coals, but they could not get those who might use the coal brasses interested. The answer always was that they could get brimstone and were not interested in coal pyrite.

Senator JONES. I will ask you to suspend at this time, Mr. Wells. Mr. Hurt is here and wants to leave on a train to-day. He would like to be heard regarding manganese ores, I believe. If you will just suspend at this time, we will hear Mr. Hurt.

## STATEMENT OF MR. JOEL HURT.

Senator JONES. In what business are you engaged?

Mr. HURT. At the present time in mining manganese ores.

Senator JONES. Where?

Mr. HURT. In Georgia.

Senator JONES. What information do you have in mind, Mr. Hurt, that you think would be of value to the committee?

Mr. HURT. I want to make a brief statement. I desire to say that I represent a property in Georgia that was mined fairly extensively more than 45 years ago. At that time and for some years I believe the records would show that the largest output of manganese ore in

this country came from those mines. In fact, for one or two years of the period there was more ore taken from these mines than from all the balance of the country combined. If I am in error in making this statement, I hope that Dr. Smith, Director of the Geological Survey, will correct me. I have not recently made an examination of the figures, because I have not had the opportunity to do so.

The properties that I represent comprise a continuing deposit, so far as information goes, in two lines—or two zones, as we call them—each about 6 miles in length. It is in Bartow County, Ga. It contains a deposit of high-grade manganese ore. We do not ship any low-grade ores, because we have not found, so far, a satisfactory sale for them.

The properties are now, and have been for several years past, in litigation. There has been an endeavor to foreclose the property. The litigation has been pursued until the circuit court of appeals has affirmed the decision of the lower court, and we consider that we are just now coming into possession of the properties or they will be sold. As I represent all the bonds, we expect to acquire the properties. In the meantime the court is to have them and to care for them and to obtain some products from the ores and turn them over to the properties that I represent, to be handled under a lease, and we are operating them under that lease. Now, knowing that we would be the owners, we necessarily are handicapped in the amount of money which should be expended to mine the ores. They are being mined in a very small way, you might say. Some days we produce 25 tons and other days 40 tons.

Senator POINDEXTER. What do you estimate the capacity would be if properly mined?

Mr. HURT. The mines have been examined by several expert mining engineers, and the lowest estimate placed upon the manganese ore that may be recovered is 1,000,000 tons. The highest estimate was 3,000,000 tons. I know personally that a large portion of the deposits was not known to either of the parties, because it has only been within the past two years that investigation by testing has demonstrated that the deposit is far more extensive than was ever known before. I think I may say without fear of contradiction, and I submit this statement also to the Director of the Geological Survey, that the largest deposits of manganese ores known in this entire country is on this property.

The output should be, from the facilities we have already established, which have been about $200,000, by the lessee, very great.

Anticipating that we may own the property, we have been doing something to prepare to mine these ores. Our facilities, barring some repairs to the machinery which was installed before we took possession as lessee, are about sufficient to produce about 100 tons a day. We are operating only a part of the machinery that is available because other parts of it need to be put in condition. We have 9 steam shovels, 12 locomotives, and a railroad 12 miles in length traversing the district, and at no point farther than a quarter of a mile from it. The entire country should be covered with miners. It is hard to estimate what limit should be placed upon the possibilities of the properties if sufficient facilities were employed.

The ore is embedded in clays. Our experience, which began in 1902, at which time we spent in one mine over $70,000 to develop it,

shows that it requires about 30 tons of the material to produce 1 ton of the manganese.

At times we encounter dornick. That is known as lump. It is the conventional term used by miners of manganese ores, and it ranges from one-half a ton to 20 tons. We have encountered several of those within the past two years. When we strike one of those dornicks, it does not need to be dressed. It only needs to be blasted out and shipped. The bulk of the ore is in gravel, ranging from the size of a pea to the size of a man's head. It all has to go, except these large dornicks, through a dressing plant. We spent in the establishment of two plants alone about $100,000 in the past two years.

Senator POINDEXTER. What is the process of dressing?

Mr. HURT. There is a log washer which removes the bulk of the clay, leaving only the heavy ingredients of manganese iron and silica. When this has passed through the washer and the clay has been sluiced away by many thousands of tons of water which is introduced, the ore passes over a belt, a picking belt, where pickers are placed to pick out the larger pieces of silica, rock, and iron ores. This ore is in close proximity to deposits of brown hematite iron ores, so that by erosion and the process of removal the iron ore, particularly on the surface, is more or less intermixed with the manganese.

When it passes from the belt it goes into a bin, where the ore is distributed in proper amounts before a set of pickers. We employ women entirely for that. They pick out the smaller particles of the foreign material as far as they can afford to. Thence, it passes into another bin and it shot from an elevation which this bin has above jigs into the jigs. In one plant we have four batteries of jigs, and by this process of jigging all the lighter materials are expelled, leaving the manganese and the iron remaining. The iron by this time has been so removed by the process that we have employed before it reaches the jigs that we get a reasonably small per cent of iron remaining.

During the past two years we have had much correspondence and negotiations with the representatives of furnaces producing ferromanganese. We found that we were met at every turn by the principal parties with the proposition that ores are imported of the same grade, or a higher grade in some cases.

Senator POINDEXTER. What is your grade? What is the percentage of manganese?

Mr. HURT. Our ores run about 43½ per cent. An average of many of them, when properly selected, will be about 50 per cent. All this 43 per cent ore usually carries a large percentage of barium oxide, and, that being the base, we consider it is not a disadvantage; on the contrary, it is an advantage. If you deduct the barium oxide from 100 units, you have 88 units of the material as the remainder. If that should be counted, that would bring it close to 50 per cent. If the barium oxide available is the best along the line which it is to be used in preparing it in the furnace, there should be a credit allowed for the barium oxide, but we get none. It is treated as a foreign substance entirely, and the ore is graded on the basis of the entire tonnage. If you have 88 per cent of a ton of ore running 50 per cent and you place in it 12 per cent of lime, you do not count the lime as a foreign material, because in the furnace it is necessary to flux it. To what extent barium oxid in this ore should have credit

I am unable to say, because I have not pursued the subject sufficiently to determine it.

We operated a pig-iron furnace for some years on this property and have some knowledge of the operations of a pig-iron furnace, and also some of ferromanganese operations.

Senator BAIRD. As to the material that you are now getting, are you getting enough to work it?

Mr. HURT. No, sir.

Senator BAIRD. What do you get for it?

Mr. HURT. $1.10 per unit. It runs about $36 a ton delivered at the furnace.

Senator BAIRD. You can not operate successfully at that price?

Mr. HURT. Not and remove the large amount of material that we have to remove. There are two processes of mining manganese. Our predecessors mined it almost entirely by stoping. To mine by stoping you drive a shaft into the body of the ore which carries usually a large overburden of foreign material. Through this shaft you remove the ore with timber above it to hold it, just as they do in some of the coal mines. In that process all the ore has to come through this tunnel and up the shaft by elevator. We have been mining it by open cuts, cutting away the surface. The deposit is sometimes 400 feet wide. We are mining it to-day where it is 400 feet wide.

Senator POINDEXTER. How much below the surface?

Mr. HURT. It usually appears within 8 or 10 feet of the surface. In many cases we find it coming directly to the surface.

Senator POINDEXTER. Whereabouts in Georgia is this?

Mr. HURT. It is in Bartow County, Ga. If the committee please, I would like to state that those properties were once controlled by what is known as the Georgia Mining, Manufacturing & Investment Co., which more than 45 years ago acquired six of the principal mineral properties, chiefly coal and iron ores, and considered the least important the manganese ores. One of the properties was controlled by Mr. Ward, who was a mining engineer. I have heard that he was a graduate of Yale. I can not vouch for that, but I do know that he is a very able man. He mined manganese. Later his company was acquired by the Georgia Mining, Manufacturing & Investment Co. They continued to mine manganese, removing most of the ore used from one mine known as the Chumley, which is a mine well known in the department. This Chumley mine stands to-day, since the surface mining was done in 1902, about 80 feet high. It is 40 feet thick between the hanging wall and the footwall. From that mine we shipped to the South Pittsburgh furnaces and to Chicago. It was pronounced a very excellent ore. It averaged for all the shipments we made 42 per cent. That we consider our leanest ore, because it carries more silica than the ores we are mining to-day. The ores we are mining now carry about 5 per cent of silica, not exceeding 8, depending upon how successfully the cleaning process is carried on. The Chumley mine carries ores in combination yielding up to 15 per cent. Most of the mines we are using are richer than the Chumley deposit. We are not mining that Chumley deposit to-day, the reason being that the spur track was removed some time ago by the parties with whom we are litigating. The track has not been relaid, and it requires money to do all this work.

My thought, after reading the bill passed by the House and the redraft of the bill which has been proposed for the consideration of your committee, is that, so far as manganese ores are concerned, it is particularly important that the Government place these domestic mines—and there are a great many of them—in a position so that they can provide the machinery and facilities for mining this ore to-day to compete with the foreign importation.

Strong concerns know that manganese is essential for steel. It is commonly termed, I believe, the medicine for steel. It is a most peculiar agency in the manufacture of steel. It utilizes the impurities, particularly phosphorus, and by applying a certain per cent you get a ductile steel or a pliable steel. It hardens the steel by introducing a certain element. Again, it seems to come in as a peculiar agency. It will make it very hard and resistant. Most of our very high-grade steel that is used in the Government's work carries manganese. Without it, the steel business to-day would be at a loss. It has to be considered an essential.

Now, we find from this report——

Senator POINDEXTER. What report is that?

Mr. HURT. This is a report of the hearing before the House committee. We find that some 750,000 tons of manganese ore—high grade, I take it—were imported last year. I believe that the estimate which was furnished before a committee of the Shipping Board in March was that this country should produce this year about 125,000 tons of high-grade ores.

Dr. SMITH. Produced last year 125,000 tons.

Mr. HURT. You estimated how much would be produced this year?

Dr. SMITH. The estimate that has been put in the record several times is that an equivalent amount is expected for the first six months of 1918.

Mr. HURT. So that you would get at the best estimate 250,000 tons of high-grade ores, if a duty were placed on foreign ores sufficient to enable the domestic producers to operate considering the higher price of labor we are now engaging. Labor in this country has increased three times what it was two years ago, and our force is one-half what it was two years ago. It ought to be increased again, and the price of labor must not be a barrier to the operation of the manganese ores in the United States.

Senator POINDEXTER. What are you paying common mining labor?

Mr. HURT. We are paying now from $2.50 to $3.50 per day. We were paying $1. We increased it to $1.25, then we increased it to $1.50, and so on by jumps until recently, two months ago, one of the contractors from one of the large plants being erected by the Government in a neighboring State distributed circulars throughout our territory offering $3.50 a day for labor to work eight hours, and time and a half for extra time.

Senator POINDEXTER. Can you give the name of that official and the plant?

Mr. HURT. This was a plant being erected at Hadley Falls, Tenn.

Senator POINDEXTER. What kind of a plant is it?

Mr. HURT. An explosive plant is being erected by the Dupont Co.

Senator POINDEXTER. Under the War Department?

Mr. HURT. Under the War Department. There seems to have been some reckless competition in the matter of engaging labor until

it is unreasonably high. When we were paying a man a dollar and a half a day he would work all day and all week. Now we pay him twice as much and he works half time and frolics the other half of the time. He is not so efficient while he is working as he was when he was working the whole week.

Senator BAIRD. Do you pay extra for overtime?

Mr. HURT. No; we do not. We are working two shifts.

Senator POINDEXTER. How many hours constitute a day's labor?

Mr. HURT. About 10 hours.

Senator POINDEXTER. Do you pay by the day or by the hour?

Mr. HURT. By the hour. We pay a man so much a day and he is expected to put in 10 hours. If he does not, he does not get that pay. These people are to the manor born; that is, most of them are. They have lived in this country and done this mining work since they were boys. They are anxious to remain there, so that we do not really pay the labor we are now employing as much as they are offered elsewhere. They do not wish to leave their homes and farms.

Senator POINDEXTER. Do some of them own their homes?

Mr. HURT. Most of them own their farms and their homes. They come in from their homes and do the work—boys and women.

Senator BAIRD. That is a good kind of labor, is it not?

Mr. HURT. Yes.

Senator BAIRD. Is this property so tied up legally that it can not be properly worked?

Mr. HURT. No, sir; it is not. We declined to take possession of the properties three years ago and care for them and the machinery that was on them. There was about a million and a half dollars of machinery and railroads. At that time they were operating about 40 miles of railroad. We declined to take care of the property until the parties in litigation determined to fix a price at which we could get the property. Even though the bonds were declared not to be a proper lien, we had a contract approved by the court, so that we are in a position to put the money down and we expect to get it.

All the decisions are in our favor. I have just received a telegram that the Circuit Court of Appeals at New Orleans granted, on last Monday, the 20th of this month, an application filed by the parties for a writ of certiorari to the Supreme Court of the United States. That is the only thing that remains to be tried out. We do not think that the Supreme Court will grant the certiorari. Probably not in one case in a hundred do they grant it. Even if it does, the properties are available because, as lessees, we are handling them with the right to buy them, and the lease is to extend six months after the decision is rendered, so that if we could handle the property we could put it into condition to produce not less than 200 tons of ore per day. That could be increased if there were sufficient log washers established along the foothills to remove the clay and sand residuum and the other impurities to our jigging plant. We have two very fine jigging plants. These jigging plants would handle 150 tons alone. Then there should be other plants established.

All of the other property is easily accessible. It is on an easy grade. The mountain, which is really but a small hill, though we call it a mountain, comes in this way [illustrating] and comes to a slope at the foothills. This manganese is down an easy incline. The facilities are ideal.

Senator BAIRD. There is plenty of water?

Mr. HURT. There is plenty of water. The facilities, I say, are ideal. There is no place that I know of where the shipping facilities are so good.

Senator POINDEXTER. What railroad is there?

Mr. HURT. The Louisville & Nashville Railroad operates from Louisville. It has a line directly from Cincinnati, coming through to Knoxville, and then to Cottersville, Ga., from which point it is now building a line into Atlanta. At Cottersville it connects with the State road, the Western Atlantic, which is owned by the State of Georgia.

Senator BAIRD. How many hand laborers, miners, and everybody else, would it take to produce that 200 tons?

Mr. HURT. We ought to use a thousand men a day to produce 350 tons. We have now 150 to 175. They come and go.

I am not here to advocate any features of this bill, but this is on a subject in which I am deeply interested. I wish to say to you that the Appalachian Range of mountains, considering Georgia, Tennessee, and Virginia, carry enough manganese, in my judgment, to supply the whole demands of the country, and your freight rates are light. We are shipping ore at a freight rate of $1.15 to an electric furnace in Anderson, Ala.

All the parties who have used this ore are very anxious to continue the use of it, because they say that it is excellent ore for the the purpose. In fact, we know it to be. We have every car analyzed and sampled. This is a great subject for the country to consider, and the question is how these properties can be utilized. I do not hesitate to say that the property should be utilized.

Speaking for the interests I represent, I believe that it should be utilized on any basis which the Government would lay down to promote the production of more ore at these mines.

There are two zones paralleling each other. They come together. There is a range over here [indicating], and these ores come together in this hill [indicating]. Each zone is 6 miles in length.

Senator POINDEXTER. Does your lease cover both zones?

Mr. HURT. Yes, sir; all the property.

Senator POINDEXTER. Are you working at one zone only?

Mr. HURT. In this one zone we have a thousand-horsepower steam station. We are generating electricity, and except for the amount of coal used for electricity and steam shovels all the power comes from this plant.

Senator BAIRD. Will it be possible for private individuals to undertake to use that plant successfully with the Government raising wages all the time?

Mr. HURT. It knocks us out every time. We were shut down ten times on account of the failure to have coal and on account of labor running away.

Senator BAIRD. That is the same as every other business in the country.

Mr. HURT. Yes, sir. If the Government does not take hold of the question, since you speak of the matter, and stop this reckless bidding for labor, I do not think we will have very much labor. Let me say that the price of 80 per cent ferro to-day is about $300. When we

were selling the ore it was at about two-thirds the price now being paid.

Now the price is too low, absolutely. It should be raised to at least $400. Add $100 more to a ton of ferro, either by duty or by the Government controlling the price in some other manner. You should add $100 to the price of 80 per cent ferro. That would mean that it would carry it all along the line, and that the furnace men will get the same money which they are now receiving, and that you will add 93 cents to the price of steel. That is all. That is a very simple process. If you will do that, you will put the domestic mine in a position where efforts will be made by private individuals to develop. If they can get help from the Government, so much the better. You will get a large development from private resources if you can control the labor.

Dr. SMITH. Mr. Chairman, can't Mr. Hurt add what he thinks that would mean in increase in the price of ore?

Mr. HURT. The whole of this increase should go to the ore man essentially, and nobody else would suffer. The steel man would get the same he is now getting; the furnace man would get the same he is now getting for the pig. The benefit, however, will go to the ore man, where it is needed.

Dr. SMITH. That would make what difference to you for your ore?

Mr. HURT. It would amount to about $70 a ton instead of about $46. It would amount to somewhere in the neighborhood of $1.75 per unit for high-grade manganese ore.

Senator POINDEXTER. What is a unit?

Mr. HURT. It is so much per cent. For instance, 45 per cent ore is 45 units ore.

Dr. SMITH. Wouldn't that be about $40 a ton increase or nearly a dollar a unit on the ore?

Mr. HURT. I have not figured it very carefully, but this morning I made some figures. I believe I have the paper in my pocket. I figured that 44 per cent ore would be about $81 per ton. The 42 per cent ore would be $73.50; the 40 per cent ore would be $66; the 38 per cent ore would be $58.90; and the 36 per cent ore would be $52.20. We are interested in ore only above 40 per cent. We do not expect to furnish any that does not run from 40 up to 45 per cent.

We were at one time shipping this ore, quite a lot of it, in 1916, to nearby furnaces, controlled by the steel corporation. They were very nice to us. But we were right up against the Chilean ores. Cargoes of those ores came in and they analyzed a little higher than our ores. We can furnish analyses, too, but when the carload comes in for analysis you find that it is a different proposition. Granting, however, that it was a better ore, and we were compelled to ship this ore at this price, there was no money in it; we lost money mining it. We asked for a conversion proposition, but did not get it. Later, I am reliably informed, the corporation ceased to sell ferromanganese to anybody, and my construction of that decision was that not desiring to get mixed up in the price of ferromanganese, the corporation preferred to manufacture its own ferro from its own import mines, whether they owned the mines, or bought the lease, or how. That is the way the matter operated. Since that time other local furnaces have come into the business, particularly this local furnace at Anderson, Ala., which is now doing a very nice business. I understand that is not operating any longer upon foreign ores.

Senator BAIRD. It seems to me surprising that the Steel Corporation did not take hold of the property and develop it.

Mr. HURT. We have not been in a position to offer it to anybody. My suggestion, from a practical standpoint—I am not speaking of our interests alone, but of the interests of the country generally—is that you put a price, by duty or otherwise, on the imported ores that will enable us to produce these domestic ores. Then you will get these mines developed.

Senator POINDEXTER. Do you think you could get your State to join with you in support of a tariff on manganese?

Mr. HURT. During the period of the war. It was the tariff that put us out of business in 1902. We were shipping ores when ferro was worth something like $100 a ton; say, $80. We shipped it to the Tennessee Coal Iron & Railroad Co. They made a run on our ores. It was very successful. Almost immediately, within less than a month, as I remember it, the price dropped to $50 for ferromanganese, and the T. C. I. went out of business. We then began to ship to the Steel Corporation at South Pittsburgh. Then we shipped many thousands of tons of ore to South Pittsburgh, the average being 42 per cent, and we delivered it there at a price of something above $11, about $11.50, and paid the freight ourselves. We made no money. It was a losing proposition. We invested considerable in opening one mine—over $70,000 in one mine—and after shipping for quite a while to the South Pittsburgh furnaces, we decided to pull out of the manganese field, and so we abandoned the mine and left the equipment, such as large cables and skip hoists, etc. We had a shaft in the ground 149 feet paralleling the ore from the top of the ground.

Now, that ore has not been touched until this day. That one place will produce almost an indefinite amount, because it is over a mile in length, leading through the same deposit.

The Government has made some inquiries about this. We have sent reports occasionally. We had to suspend operations a good part of last year, because we could not get coal. We had our own mines. They had been shut down, and it required a considerable amount to open them again. There are over 60,000,000 tons of coal on this property. This manganese property is on land known as Brown ore land. We moved 1,000,000 tons from that which average 53 per cent. It is the most remarkable deposit that I know of in the South anywhere. We did most of it by blasting. We took over 100,000 tons from a cut of iron ore in close proximity to the manganese. They parallel each other, and they become intermixed by erosion. We are having a great deal of expense in removing the iron ore now. Since the standard has been changed, as I understand it has been, from 80 to 70 per cent ferro, the iron content of the ore is not so objectionable. You can run a higher per cent of iron in it.

Senator BAIRD. You think if there was a tariff on these foreign ores we could produce enough in the United States to supply the demand?

Mr. HURT. I believe the United States in two years' time would supply all the ores you would need. You could not do it immediately, of course.

Dr. Smith's estimate of twice 125,000 tons, which we hope to get this year, would probably be increased 50 per cent again this year. But you must stimulate this. Corporations can not afford to invest

in mining properties of this character without knowing what is coming afterwards. We have invested on this particular property over half a million dollars. We have equipment there to-day that can not be duplicated for that amount of money. We are using just a part of it. The corporation that is leasing the property has no funds except its interest in about half the bonded indebtedness on the property.

Senator BAIRD. How much is the bonded indebtedness?

Mr. HURT. About a million and a quarter, including interest. There is a great deal of machinery on the property. We had a 200-ton pig-iron furnace. It has been relined recently.

Senator POINDEXTER. You have about completed your statement? You have stated, have you, the substance of all the difficulties under which you are laboring? I understand that they consist largely in interference with labor and the competition caused by the lower-priced imported ores?

Mr. HURT. Yes, sir.

Senator POINDEXTER. You have examined the bill that is pending, have you?

Mr. HURT. Yes, sir.

Senator POINDEXTER. Are you in favor of it or not?

Mr. HURT. If I were going to draw a bill, I would make changes in the bill.

Senator POINDEXTER. You are in favor of some general legislation?

Mr. HURT. Yes, sir. The Government should take hold of the matter through wise heads and find out how it could be handled. There must be some method of checking this indiscriminate bidding for labor.

Senator POINDEXTER. You suggest that the importation of foreign ores be checked by a tariff or an embargo during the time of the war. That would aid in the matter of shipping, which is probably the principal emergency that exists. Another Government remedy that you suggest, I believe, is the fixing of higher prices. Is there anything else that you have in mind?

Mr. HURT. Nothing, except that in fixing this price I would not advocate its being made prejudicial to the steel manufacturers. The same cost of the ore, or the price added to the ore, should go along through the manufactured product. I have estimated that it would be 93 cents per ton of steel. I believe this manganese goes into steel in amounts of about 15 units.

Senator BAIRD. In other words, the raise should go to the man who gets out the stuff?

Mr. HURT. Yes, sir.

Mr. MCMAHON. May I ask Mr. Wells just one question?

Senator POINDEXTER. Yes.

Mr. MCMAHON. I would like to ask whether, in view of the sulphur situation, in his opinion, any action should be taken on the part of the Government to recover sulphur from the waste gases that are now being thrown off by the western smelters?

Mr. WELLS. I think it is a desirable thing to do.

Senator POINDEXTER. The committee will take a recess until 10 o'clock to-morrow morning.

(Thereupon, at 12.15 o'clock p. m., the committee adjourned until Thursday, May 23, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

THURSDAY, MAY 23, 1918.

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met, pursuant to adjournment, at 10 o'clock a. m. at room 450, Senate Office Building, for the purpose of resuming consideration of the bill H. R. 11259, Senator Charles B. Henderson (chairman) presiding.

Present: Senator Shafroth.

Also present: Dr. Van. H. Manning, Director of the Bureau of Mines; Hon. George Otis Smith, Director of the Geological Survey; Mr. A. G. White, mine economist, Bureau of Mines; and Mr. H. S. Mudd, mineral technologist.

## STATEMENT OF MR. EDWIN F. GAY, DIRECTOR OF THE DIVISION OF PLANNING AND STATISTICS, UNITED STATES SHIPPING BOARD.

The CHAIRMAN. You may proceed, Mr. Gay, if you wish to make any statement to the committee.

Mr. GAY. Mr. Chairman, I should like to talk rather freely. Is it necessary to have some of these figures appear in the record?

The CHAIRMAN. We should like to get as much in the record as is pertinent to this issue.

Mr. GAY. Some of the things are pertinent that are rather confidential.

The CHAIRMAN. When you come to those matters just request they be not taken down. You may proceed.

Mr. GAY. I think it is well known that there is a serious shortage of ships, even when you survey the whole available world's tonnage. The depredations of the submarine have been very serious in reducing the world's tonnage. The best figures that we have are the estimates of the world's tonnage which were furnished us from the American delegates to the Allied Maritime Transport Council. We cabled over to get the most recent reliable figures, comparing January 1, 1918, with January 1, 1917. The basis upon which they are figuring now, and which is the basis agreed upon by the delegates of the four powers so as to have a common standard of comparison, is not the same that is ordinarily used in our figures from Lloyds Register, so it is impossible from these figures to make a comparison of the conditions before the war. This includes national tonnage in each case and seized enemy vessels. It excludes vessels not capable of some important service, such as river craft, tugs, dredges, fishing vessels,

small coasters, and the like. It is not based on taking an arbitrary figure like 1,000 deadweight tons or 100 gross tons or any other figure as a basis, but is taken on the basis of actually going over the list of vessels and picking out those that are not suitable for any kind of ocean shipping.

I have a list here by countries, which starts with Great Britain with 22,950,000 deadweight tons as the leader, and second on that list comes the United States with 4,990,000 deadweight tons. Third comes France with 2,431,000 deadweight tons, and next is Norway with 2,371,000 deadweight tons. The total the 1st of January, 1918, of all these countries—Great Britain, France, Italy, United States, Belgium, Norway, Sweden, Denmark, Spain, and others, of course cutting out the central powers of Europe—is 45,744,000 deadweight tons.

On the 1st of January, 1917, a year ago—now over a year ago—on precisely the same basis of computation from the same countries the total was 52,086,000 deadweight tons, a difference of something over 6,000,000 tons in the net loss after including all gains by shipbuilding on the one hand and deducting all losses from submarines and other maritime losses on the other hand. That is the picture of one year of warfare in the world's tonnage.

The estimates as to what is to happen in 1918 differ in the estimates of conservative persons. There are some who are hopeful enough to think that the shipbuilding of all the countries taken together will overtake the losses from submarine and other maritime disasters. That estimate assumes a decreasing scale of losses from submarines. Until we have further information of the effectiveness of the antisubmarine devices it hardly seems to me to be safe to make that assumption. The best English authorities we have have pointed out that during the whole period of submarine warfare there has been a zig-zag motion at times, the submarine gaining the lead and then the antisubmarine devices gaining the lead, so it is somewhat premature to count on the permanent diminution of the submarine menace.

If we do not count on the permanent diminution of the submarine menace, we face in 1918, I think it is safe to say, that the total shipbuilding of all the allied countries will not keep up with the submarine and other maritime losses. In the meantime the strain upon the world's tonnage is greatly increased by the enormous volume of tonnage required for the movement of troops overseas, of which our own movement is the greatest as far as actual army movements are concerned, with a very considerable movement in connection with Palestine, Mesopotamia, and the like, and a still greater movement of supplies abroad and for the maintenance of our own military forces.

The net result of that situation, as far as deficit in tonnage is concerned, is brought out in this statement that you can put in the record, and is further brought out in a confidential telegram which has just been received from the Allied Maritime Transport Council.

The figures which I have just given to the committee in confidence do not include on the allied side abroad the recent serious condition which has arisen in tonnage from the advance of the Germans. In that advance the Germans seized or put out of use coal mines in France. It deprives France of approximately 900,000 tons of coal.

England has to furnish that coal. France was already at her minimum. That means the diversion of tonnage from other purposes to French use. That is a new demand which has been made on this increasing deficit of tonnage, and the figures which I have given do not include, as I indicated a moment ago, the increasing elasticity of our own military program, so that the statement of deficit in dead-weight tons in 1918, which I have given, is a very conservative figure. There, briefly, is the shipping situation with which we are faced to-day.

(The statement referred to by the witness is here printed in full, as follows:)

*Trans-Pacific tonnage, American and foreign.*

| Regions. | Steam vessels. | | Sailing vessels. | |
|---|---|---|---|---|
| | Estimated net in continuous service, on the basis of March and April clearances. | Net×2½=dead-weight tons in continuous service. | Estimated net in continuous service, on the basis of March and April clearances. | Net×2=dead-weight tons in continuous service. |
| East Asia | 263,219 | 592,238 | 20,504 | 41,000 |
| East Indian | 48,287 | 108,624 | ..... | ..... |
| British Indian | 84,655 | 190,470 | 9,530 | 19,000 |
| Australian | 44,318 | 99,715 | 94,844 | 189,000 |
| Hawaiian | 15,655 | 35,226 | 4,158 | 8,300 |
| Total | ..... | 1,026,273 | ..... | 257,900 |

*Allied and neutral merchant tonnage May 17, 1918.*

[Includes national tonnage and seized enemy vessels. Excludes vessels not capable of some important service, such as river craft, tugs, dredges, fishing vessels, small coasters, etc.]

| | Dead-weight tons Jan. 1, 1918. | Dead-weight tons Jan. 1, 1917. | | Dead-weight tons Jan. 1, 1918. | Dead-weight tons Jan. 1, 1917. |
|---|---|---|---|---|---|
| Great Britain | 22,956,000 | ..... | Russia | 984,000 | ..... |
| France | 2,431,000 | ..... | Sweden | 1,170,000 | ..... |
| Italy | 1,845,000 | ..... | Norway | 2,371,000 | ..... |
| United States America | 4,990,000 | ..... | Denmark | 907,000 | ..... |
| Greece | 459,000 | ..... | Netherlands | 1,903,000 | ..... |
| Belgium | 258,000 | ..... | Spain | 1,027,000 | ..... |
| Portugal | 459,000 | ..... | All others | 1,528,000 | ..... |
| Japan | 1,900,000 | ..... | | | |
| Brazil | 556,000 | ..... | Total | 45,744,000 | 52,086,000 |

Mr. GAY (continuing). I now come to the specific question that you have asked. I have here the figures in regard to the Pacific trade. The serious shortage of tonnage is primarily and first of all in the trans-Atlantic service. We are now faced with a serious shortage for the east coast trade with South America—a shortage which at the present moment is menacing. We may say we have gone below the danger line. In order to take ships—to release ships in our military program—they have been taken where they could be most quickly transferred and they have been taken, as I say, out of the east coast trade. These we are now beginning to replace, but at

the present moment we have not enough ships to bring our imports from the east coast of South America. We have not enough ships to take our usual exports to that same region. By agreement with the trade, it is understood that we must have the minimum importation of manganese to the United States of 35,000 tons a month. But ships have been taken to such an extent that we are now only having imported 10,000 tons. Ships are going back from that trade and that danger point will be reduced, but there is a serious shortage there of ships.

Similarly with the west coast of South America, an unprecedented demand for nitrates has made it impossible to get back the nitrates from Chile. We have now over 500,000 tons of shipping engaged in nitrate importation, and it has been a very serious problem to find those ships. As a matter of fact some of the ships taken from the manganese trade have been put into nitrate trade because the pressure was so intense. The one place in the world where there is any excess of tonnage is in the Pacific. It is the last available source, the only reservoir from which we can draw ships.

The situation in the Pacific is, briefly, as follows: To carry the necessary imports into the United States from across the Pacific, we estimate that in 1918 we shall need the services of approximately 700,000 deadweight tons of ships, and you will note we have 2,976,000 tons. That is an increase in long tons in 1918 over 1917, which was approximately, in 1917, 2,000,000 tons moved across the Pacific. That has been increased on account of the necessity of the importation of larger quantities of certain imported commodities like vegetable oils and certain other indirect necessities of the war.

We estimate there is available shipping in the Pacific, including foreign vessels not controlled by the United States—the ships of the United States and the foreign ships controlled by charter of the United States—approximately 1,300,000 deadweight tons, when 700,000 tons are needed. In other words, there is a surplus of 600,000 deadweight tons of ships there. We have in the Pacific to-day ships that we own or control of about 350,000 deadweight tons. A very considerable proportion of those ships must ultimately be withdrawn from the Pacific trade.

The CHAIRMAN. In regard to the shipping on the Pacific coast, take, for instance, antimony; every ship has to have a certain ballast, does it not?

Mr. GAY. Yes; it is advisable in good storage to have a mixed cargo where possible, and especially in carrying considerable quantities of lighter commodities, to have some heavier commodities to carry at the same time.

The CHAIRMAN. This more heavy antimony makes good ballast, does it not?

Mr. GAY. Yes; but of course it does not supply the total ballast needed. One ship could bring in all the antimony needed.

The CHAIRMAN. Then the question of the importation of antimony is not a serious one at the present time?

Mr. GAY. Not at all; not in the slightest degree. Our proposal is to bring all the antimony needed in the United States. On that one metal there is no question.

The CHAIRMAN. Do you know of any other metals that are imported?

Mr. GAY. Yes; our imports of metals from the Far East—antimony, chromite of iron, copper, mica, moxite sand and thorite, graphite, tin and tin concentrates, and tungsten. Tin is the most important by all odds and the most important of the metals that we must import. We ought to obtain from that source tin, which would use 11,000 to 12,000 dead-weight tons of shipping from the Far East.

The CHAIRMAN. Are there any of the metals you have just referred to that give any concern relative to the shipping or that you are thinking of cutting out?

Mr. GAY. By agreement with the trade we are already restricting very markedly the importation of chrome from New Caledonia. That has been a very heavy burden, and the trade has agreed to the policy of conservation and utilization of domestic resources of chrome, so that we can restrict very considerably importations from New Caledonia. That is a very marked relief to the shipping situation.

The CHAIRMAN. How about mica?

Mr. GAY. The mica is a very minor matter; we have an estimated import of approximately 320 tons if mica, 174 dead-weight tons of shipping.

The CHAIRMAN. That does not bother you?

Mr. GAY. No; there is no question about that.

The CHAIRMAN. What is another one of the metals that you mentioned?

Mr. GAY. The largest is tin, tin concentrates; antimony stands second on the list.

The CHAIRMAN. Antimony you have already testified about?

Mr. GAY. I have spoken about antimony.

The CHAIRMAN. Tin is the first?

Mr. GAY. Tin comes first. That is essential to us.

The CHAIRMAN. Antimony is the second in importance?

Mr. GAY. Yes.

The CHAIRMAN. And the third?

Mr. GAY. The third in order of importance is chrome, which is being reduced; our figures indicate a very large reduction this year. We estimate what we shall need to bring this year and it will take 2,000 to 3,000 dead-weight tons.

The CHAIRMAN. Where was it taken from?

Mr. GAY. The importation has been cut, speaking offhand I should say that it has been cut to one-sixth of what it was, so far as tonnage is concerned. That figure I should wish to check more accurately and put that in the record properly.

The CHAIRMAN. The next metal in importance of shipment on the Pacific Coast is what?

Mr. GAY. Graphite, calling for about 2,000 deadweight tons of the estimate this year.

The CHAIRMAN. What is the situation relative to the shipment of that? Can that be taken care of?

Mr. GAY. Yes. I think it can. As a matter of fact there are large deposits in the United States and we are assuming that the United States supply will largely take care of our requirements. That which is imported is a special and fine variety of graphite, flake graphite, Ceylon graphite; we need to get in that much, but the

greatest portion of the supply can be developed in the United States and should be developed in the United States.

The CHAIRMAN. What is the next metal of importance?

Mr. GAY. Copper.

The CHAIRMAN. And the next?

Mr. GAY. Copper, 1,000 deadweight tons, and below that these various small items, the moxite sand is 210 deadweight tons and mica 174 to 200 tons, possibly, and the tungsten 75 deadweight tons. Those, I think, cover the imports of minerals.

The CHAIRMAN. Then, as I understand you, Mr. Gay, there is no serious situation on the Pacific coast at this time relative to the importation of these metals?

Mr. GAY. No, sir; the only situation is the New Caledonia situation, and that we have taken care of.

The CHAIRMAN. That is in regard to chrome?

Mr. GAY. Chrome. By the agreement with the trade of the United States, it has been taken care of. A very careful examination was made of that whole subject by experts acting in close cooperation with the Bureau of Mines and the Geological Survey, and on the basis of the facts there developed, the trade agreed to carry through a program of conservation.

The CHAIRMAN. Could the program that you have arranged for be carried out even though there was a large transfer of shipping or boats from the Pacific to the Atlantic coast?

Mr. GAY. Undoubtedly.

The CHAIRMAN. Then you do not anticipate, under your present program, any serious difficulty in the importation of the ores you have referred to from the Far East?

Mr. GAY. I think it is the least serious situation.

The CHAIRMAN. The really serious situation is on the Atlantic coast?

Mr. GAY. Yes, sir; and there it is very serious.

The CHAIRMAN. You may have something additional you think of in regard to the matter. If so, please state it.

Mr. GAY. The people of this country should know what has been done in the reduction of imports by Great Britain. I have found a great disposition to criticize Great Britain; there has been a feeling of distrust in regard to her policy, that she was possibly seeking trade advantages after the war, even during the war; but I believe that no one who studies the trade statistics of Great Britain can doubt for a moment that she is putting every resource at the service of the allies to win this war. The total tons of her imports in 1913 was 52,793,000 long tons; in 1916 it was 42,826,000; in 1917, 34,417,000; and in 1918, on the estimates made of the actual taking off of ships for military purposes, it will be 30,220,000 long tons; and she is now taking more ships off and still further reducing for two purposes, to supply coal to France and to give more shipping to the United States, to loan more shipping to move our troops across, so she must be down to twenty-five or twenty-six million tons. In other words, at the present time Great Britain has in tonnage but approximately 50 per cent of what she had in 1913, before the war.

The CHAIRMAN. She has cut her imports practically in half?

Mr. GAY. She has cut her imports practically in half. These figures are not merely given us by England, but have been tested by

our own statistical staff, and tested by the American statistical staff, on the other side, and certified by them; they come to us with their certificate. The English imports to-day consist only of goods essential to the prosecution of the war, essential foods and munitions. That is the fact about the English situation. No other country has approached her in the sacrifice of her carrying trade for military use. That, of course, is a diminution enormously in excess of what has come from the submarine warfare; that means those ships have been transferred to military purposes.

The CHAIRMAN. In other words, she has cut her imports down to the bare necessities?

Mr. GAY. She has cut her imports down to the bare necessities. In answer to that people will say, "Look at her exports. It is absolutely for her own use in the long run." She should try to maintain some exports of high-grade and high-priced commodities rather than to take small bulk. It is essential for the international balance that she should continue to try to do that, that she should endeavor to get raw materials for manufacture even under the great and increasing difficulties. That is the exact trade situation in England. I think it would be well if the American public knew what England is doing.

The CHAIRMAN. Have you considered the bill before this committee at all, Mr. Gay?

Mr. GAY. I have only read it very hastily; I have not given it any careful consideration.

The CHAIRMAN. You know the general principles of the bill—what they are—do you not?

Mr. GAY. Yes.

The CHAIRMAN. In your opinion would such a bill assist along the lines you have indicated?

Mr. GAY. In my opinion such a bill would assist materially.

The CHAIRMAN. In just what way; can you illustrate?

Mr. GAY. As I understand the general purpose of the bill, without going into details, it is to give such assistance in the development of mineral resources in the United States that we can provide from our domestic resources substitutes for commodities which otherwise have to be imported overseas, essential minerals that can be produced in the United States, thereby lightening the burden upon an already overstrained shipping situation, and would make it possible to carry out a larger military program. There is no question at all about that. Every effort should be made, possible to be made, to develop our own available domestic resources in minerals.

The CHAIRMAN. There are some metals and ores that we must import, are there not?

Mr. GAY. There are some that we must import.

The CHAIRMAN. Until this country is self-sustaining in these metals and ores, it would be necessary to continue the importation of certain materials until that time arrives?

Mr. GAY. Yes, sir.

The CHAIRMAN. Take manganese ore, for instance; it is absolutely necessary to import the high-grade ore at this time, is it not?

Mr. GAY. At this time; yes. We have already largely restricted the importation of manganese, but there is a necessary minimum below which it is not safe to go.

The CHAIRMAN. And the Shipping Board, realizing that fact, will arrange to take care of it?

Mr. GAY. The Shipping Board is now arranging to take care of that essentially necessary mineral for the maintenance of our steel industry.

The CHAIRMAN. Are there any other metals or minerals that fall within the same line that will be taken of?

Mr. GAY. Yes; those that are vital to the conduct of the war.

Senator SHAFROTH. There is provided in this bill a method of accomplishing its purpose and object by fixing a minimum price—the lowest that we will pay for these metals that are named in the bill—on the theory that it will produce more of the metals, that new mines will be opened up and operated, and thereby the products supplied for commerce and for the Government. Do you see any difficulties in the way of the Government fixing a minimum price?

Mr. GAY. I think I should prefer not to testify on the problem of price fixing. I see great difficulties in the price-fixing program, but under all of the difficulties of the war I see no alternative for the United States.

Senator SHAFROTH. What would you think of this alternative:

Increasing this amount to the amount which was originally incorporated in the bill, namely $50,000,000, having that a revolving fund for the purpose of making contracts with those who have mines or who have good prospects for mines, and in that way, by fixing a price that they will pay for certain quantities of ore, produce an increased production.

Mr. GAY. Since a very large proportion of the ores affected by the proposed measure are directly or indirectly for war purposes, I should imagine that at least part of the purpose you intend to bring about could be carried through, could be effected by making such contracts. I am not sure that would cover all the ground.

Senator SHAFROTH. Do you think that would be a more preferable way than to make a blanket price that it would pay for the production of these metals and let the quantity attain whatever height it would?

Mr. GAY. Without having given careful study to that problem I would not be able to answer that.

Senator SHAFROTH. Do you believe that the maximum price should be fixed; I mean, that price beyond which no one can sell at a higher amount but might sell at a lower amount, depending upon the state of the market?

Mr. GAY. With the necessary policy of restricting imports which we are now embarked upon nationally, the question of the problem of profiteering, speculative purchasing, etc., are such that in my judgment a price-fixing law, a maximum price, which would enable the President to fix maximum prices, should be passed, and that applies as well to certain minerals as well as to other commodities.

Senator SHAFROTH. Do you not think that can be reached more equitably between the owners of mines by providing that a war revenue tax upon profits shall be levied, making it graduated so as to make a less tax upon the man who makes a small profit and a heavy tax upon the man who makes a larger profit?

Mr. GAY. I have not looked into that matter with care, Senator Shafroth, but I gather there are very considerable difficulties in the

way of applying excess-profits tax to a mining concern. It is difficult sometimes to make any basis of comparison with past earnings, serious technical difficulties in carrying that plan through.

Senator SHAFROTH. You recognize the fact that if you fix a price at which the man can not sell for a greater price that it will work a great inequality between the producers of these ores?

Mr. GAY. Yes; I recognize that.

The CHAIRMAN. You recognize the fact that the man who has a plant close to the railroad will unquestionably have a great advantage over the man who has his plant and his mine 6, 8, or 20 miles away from a railroad?

Mr. GAY. Yes.

Senator SHAFROTH. But do you not think that could be better regulated by this graduated tax on excess profits so it would catch the man who was making the enormous profit, and the maximum price might be very high to him, while that same maximum price would be very low, in fact would be so low as hardly to produce any ore whatever to the man who was situated a few miles from a railroad?

Mr. GAY. I wish I were in a position to answer those questions, but I have not given careful study to the problems you bring up.

Senator SHAFROTH. So you do not desire to testify on the question of price fixing at all?

Mr. GAY. I should prefer not to do so.

Senator SHAFROTH. Either maximum or minimum?

Mr. GAY. On the whole, not.

Senator SHAFROTH. It was suggested here by Mr. Taylor, president of the Colorado Miners' Association, that he was opposed to both a minimum and a maximum price on the ground of these irregularities, and he suggested that the fair way to do, so that the Government would not be burdened with a very large guarantee, and also with relation to the miner who might produce and yet in justice be entitled to that price, that a revolving fund should be used, and if the Government wanted 10,000 tons or thinks that the market needs 10.000 tons of tungsten, to make a contract for that. In that way the Government's liability would be simply for the 10,000 tons, and the miner's obligation to furnish would be limited to 10.000 tons; that is, to various miners. That seems to me to limit both the liability of the miner from overproduction on his part and also would limit the liability of the Government with respect to the ores that might be produced in great amounts.

In other words, if we have a blanket guarantee, and there should be such a thing as a great profit in it, we might swamp the Government with millions of liability by reason of it, but if the contract system were adopted and then allocate those various ores that are purchased, make a price to the trade that would be the average of the prices that the Government would pay, it seems to me it would make a less dangerous legislation than that which would arise from price fixing, either minimum or maximum.

Mr. GAY. Do I understand the plan would mean for the Government to purchase munitions, steel supply, from a maker, that it would furnish the steel makers with the necessary raw materials, the minerals?

Senator SHAFROTH. Yes.

Mr. GAY. In other branches of Government purchase we have already seen that.

Senator SHAFROTH. It would also involve the question of supplying the trade with such quantities as it estimtes is necessary to go into the various contracts they make, and also in other supplies they might have to furnish to the public.

Mr. GAY. When it comes to the Government purchasing those raw materials necessary for its own contracts, I think there is a good deal to be said for that policy. I am not at all so clear in my mind as to the plan for the Government to undertake to supply the trade.

Senator SHAFROTH. That would be true if it were not for the fact that this material is said to be absolutely necessary, indirectly in the winning of the war, and the question is not as to whether it is a wise policy in ordinary times of peace, but whether or not it is not a better policy than fixing a minimum, or fixing a maximum price. But if you do not care to go into that, all right.

Mr. GAY. I should prefer not to discuss price fixing. I have not made a special study of that in this connection.

The CHAIRMAN. You have been connected with the Shipping Board for some time, have you not?

Mr. GAY. Yes, sir; that is, definitely since Christmas. I was studying this problem for the Shipping Board before that time.

The CHAIRMAN. Are you connected at all with the War Industries Board?

Mr. GAY. I am a member of the War Trade Board, representing the Shipping Board, on the War Trade Board.

The CHAIRMAN. You understand the War Industries Board has in different ways attempted to take care of the situation of some of these metals; for instance, mercury?

Mr. GAY. Yes, sir.

The CHAIRMAN. And is there any committee of the War Trade Board doing any work along this line at all?

Mr. GAY. The question of metals has been a good deal divided; the War Trade Board has in the past had several of these matters under its care and supervision; tin, for instance.

The CHAIRMAN. And has it steel?

Mr. GAY. It has not. It was voted to transfer all its supervision over metals and minerals to the War Industries Board.

The CHAIRMAN. Do you understand that the War Industries Board has now practically taken over the handling of these various metals?

Mr. GAY. So I understand.

The CHAIRMAN. There are no other boards that you know that handle them except the War Industries Board?

Mr. GAY. No; so far as allocation and price fixing, allocation among domestic producers of metals, and price fixing, I think the War Industries Board is dong this wark.

The CHAIRMAN. I do not know of any other questions.

Mr. DAY. Mr. Chairman, may I ask one or two questions?

The CHAIRMAN. Certainly.

Mr. DAY. Referring to your testimony a few minutes ago in respect to the sentiment existing in this country among a great many people as to the sincerity of Great Britain's policy, both during the war and possibly after it, I should like to inquire if the Shipping

Board is taking that situation into account in its program, which you have referred to here, which goes to the extent of control of the business and industries of the United States?

Mr. GAY. I do not understand the question.

Mr. DAY. In making this allocation of the tonnage and commandeering this American tonnage for war purposes, is the present policy or the future policy of Great Britain taken into account in this matter?

Mr. GAY. The one problem which we are facing is trying to help with the war by putting ships at the service of the Army; not taking any other factors into account.

Mr. DAY. You are not either personally or officially advised that Great Britain has maintained an embargo of the shipment of tin to the United States, and that 90 per cent, approximately, of all the tin in Great Britain, which is practically the world's stock, is owned by American consumers who are not allowed to receive that product?

Mr. GAY. I am not aware of that. That statement should be investigated.

Mr. DAY. You are not informed then, either personally or officially, that since the outbreak of the European war Great Britain has steadfastly refused to allow the importation of cyanide of potassium to the United States, although earnestly requested to do so by the State Department?

Mr. GAY. I know nothing as to that.

Mr. DAY. Those two matters, I think, are matters which can easily be verified, having come under my personal notice as a mining operator, and it occurred to me, after hearing the remark about the sentiment of a great many people, about Great Britain's policy, that those matters should be investigated.

Mr. GAY. I think that ought to be investigated.

Dr. MANNING. I should like to ask Mr. Day if the cyanide on which embargo was placed by Great Britain was used in this country for mining purposes?

Mr. DAY. Yes, sir.

Dr. MANNING. I should like to say if Great Britain has placed an embargo on cyanide to this country, the cyanide used over there is for a very important purpose. As a matter of fact, we are under contract with a certain firm in the United States to furnish France with 100 tons of cyanide until the 1st of July, and we are making it now and exporting it to France. It is not going into any industry, except munitions of war.

Mr. DAY. I might say in explanation that this incident of cyanide arose probably more than two years ago. I do not recall the date now. It is my recollection, however, that it arose in this way: I was approached by some gold miners in the West, who learned that I was coming to Washington on some other business, and who turned over certain correspondence with the State Department to me, with the request that I take it up personally, and endeavor to secure the release of a shipload of cyanide held up at Rotterdam and owned in this country, and this cyanide was desperately needed then by the gold miners of the United States. I did get in touch with officials of the Department of State, and they told me they had had that matter up, and that Great Britain absolutely ignored their request. The matter

of tin, I think, is one well known to the trade. Incidentally I might inquire, is it not a fact that the American production of cyanide has been, since the outbreak of the European war, sufficiently stimulated to take care of all our domestic consumption?

Dr. MANNING. Absolutely not.

Mr. MUDD. Would it be fair to say, Mr. Gay, that the Shipping Board would have more confidence in the outcome of a policy of restricting mineral imports if it could in a sense share the responsibility or pass the responsibility to the organization which would have the powers granted in this bill?

Mr. GAY. I do not know that I fully understand the bearing of that question.

Mr. MUDD. An organization of this kind could take constructive means to stimulate production and provide an adequate supply of those minerals, the importation of which may be curtailed?

Mr. GAY. The action of any governmental agency which, on the one side, would stimulate domestic production of these products, the importation of which we are obliged to restrict, or, on the other side, were to see to it that the consumers of the United States receive their fair share in an allocation of the diminished supply, and on both those sides the Shipping Board is powerless and would welcome any aid, any competent Government resource.

The CHAIRMAN. Care, however, must be used in not disturbing the existing relations that have been brought about through the War Industries Board and the trade and the producers?

Mr. GAY. I should suppose that care would be taken to tie this measure up with existing agencies that are working in that direction.

The CHAIRMAN. And not put it into a new agency and start all over again, unless it could utilize to the full extent the present agencies that have been established.

Mr. GAY. It would be a pity to start all over again.

The CHAIRMAN. I think that is all.

## STATEMENT OF MR. HARRY L. DAY, OF WALLACE, IDAHO.

The CHAIRMAN. Mr. Day, what is your occupation?

Mr. DAY. Mining operator, prospector, and miner.

The CHAIRMAN. Do you hold any official position?

Mr. DAY. Yes; I am traffic director of the Northport Smelting & Refining Co., the Pennsylvania Smelting Co., the Hercules Mining Co., the Tamarack & Custer Mining Co., and some smaller affiliated lead and zinc properties.

The CHAIRMAN. Have you any official connection with the Government of the United States?

Mr. DAY. None whatever. In this connection I should like to state that I have no interest, indirectly or directly, in the sale or production or contract or handling of any of the metals or minerals covered by the terms of the proposed bill.

The CHAIRMAN. I shall have to leave the room for a few minutes, and will ask Senator Shafroth to continue the examination of the witness.

Senator SHAFROTH. Will you make a statement relative to the bill such as you desire to make?

Mr. DAY. My interest in the matter originally arose in connection with the House hearings on the Foster bill, whereby an impression had been created that the western mining people were in favor of the bill, or of the principles of it, and that in particular an organization to which I belong was supporting it. I appeared before the House committee to correct that impression, and in the course of my remarks I made some statements there which were predicated on the assertion or the belief that an emergency or a stringency existed in certain metals or minerals for commercial purposes. A subsequent investigation—I made a trip to the West and back since that time, and have had opportunity to meet some gentlemen interested in the production of so-called rare metals and minerals; I also took pains to make some inquiries in regard to the subject, and it has resulted in modifying to a considerable extent some of the views that I expressed at the House hearing.

It is my judgment that upon the whole no stringency or emergency exists on a large scale at the present time. I think this will safely apply to all the metals and minerals enumerated, with the possible exception of manganese, and also, of course, it is understood, tin and platinum. With those exceptions it is my judgment that almost all of the other metals or minerals can and will be produced in this country in commercial quantities whenever properly encouraged or stimulated. I have particular reference, and what caused me to doubt somewhat the scope of the vision behind this bill was the discovery that one mineral listed is now being produced in very large quantities in a western State, of which I am personally advised. I should like to read a short report which I have had prepared.

Senator SHAFROTH. What is that?

Mr. DAY. That is on the item of magnesite. This report is based on information I secured during my absence between these hearings. I will read a few paragraphs, which will cover, I think, as much as you care to have in the record. [Reading:]

The Stevens County deposits are of exactly the same character as the Austrian, but occur in larger and purer bodies, consequently can be just as cheaply mined and treated as the Austrian material. There are, at a very conservative estimate, not less than 50,000,000 tons of good clean material in the known deposits; an assured supply for many decades.

During the year 1917 about 100,000 tons were mined and shipped from the Stevens County district. Of this about 65,000 tons were shipped crude and the balance calcined. During this same period of time construction by three companies was carried on resulting in the opening and development of six of the largest and best deposits in the district. A railroad was constructed running throughout the entire district. Of this railroad the entire grades, trestles, and roadbed has been completed and the rails and ties laid for the first 4 miles. For the remaining 8 miles rails and ties are on the ground and there remains only the work of placing them to complete the line and thus furnish transportation for all the deposits of the district. There has been built a calcining plant by the Northwest Magnesite Co., operating near Chewelah. This plant consists of three rotary kilns with a daily capacity of probably 200 tons of calcined material. The plant is connected with the quarry by a cable tram about 5 miles in length.

The American Mineral Production Co. has developed three quarries and has erected six shaft kilns near two of their quarries with a capacity of about 60 to 70 tons of calcines daily. The Valley Magnesite Co. has opened four quarries and has erected three shaft kilns and has six others under construction to be completed shortly and has a tram to connect the quarry and plant with the newly constructed railway.

There are several plants near the district which have been used in treating lime and for the production of Portland cement which have been also used in calcining magnesite. The capacity of these plants would be about 350 tons a day of the calcined magnesite.

*Summary.*—Approximately 100,000 tons were produced in 1917, six large quarries were opened and developed, railways, roads, and trams completed to deliver this material most economically to the main line. Plants were completed or are under construction with a daily capacity of from 350 to 400 tons. Over $1,000,000 has already been invested in these improvements and an equal sum will probably be invested during the coming year. From this it will be seen that the business is upon a solid and substantial footing and the district will be abundantly able to supply the needs of this country and of our allies without the slightest difficulty; moreover, the size of the bodies, some of which are from three to four hundred feet in width by a thousand or more feet in length, is such that their mining is the cheapest possible. The grade is so high that the best possible material can be produced at a very low cost. It would be possible to furnish 200,000 tons from the district this coming year without any difficulty. This, with the production of California, will amply take care of all our needs.

There is but one assistance which the Government might profitably render; that would be in assisting to complete the railway, inasmuch as the three best deposits in the district which are developed lie near the end of the railway, of which about 8 miles remain to be laid. Shortage of funds is given as the reason for delay in its completion.

It would require only from $30,000 to $40,000 to finish the work of laying ties and rails on the 8 miles of grade, which sum would be repaid within the year by freight at $1 per ton on magnesite from mines near the railway's farther end, and would save $3 now paid for the haul.

Senator SHAFROTH. You say that with encouragement there could be produced a sufficient quantity to supply all of the United States. What method of encouragement would you recommend?

Mr. DAY. I regret to find my views not in accord with those of the gentlemen representing the Geological Survey and the Bureau of Mines, notwithstanding our many years of association. I find myself flocking all alone, Senator, on that proposition. I look at it simply from the standpoint of a business man.

Senator SHAFROTH. We are trying to find out just what is best, and we want your views, no matter what they are, and maybe they are the best views and may adopt them.

Mr. DAY. As a business man and a mining man engaged in practical operations of some considerable properties, I am not in sympathy with any of the ideas that have been expressed. I believe an attempt to establish either a maximum or a minimum price would be a mistake, would be disastrous, and I believe that licensing would be erroneous, and I consider there is no such thing as hoarding in the metal business. So far as I can see, that feature of the bill was copied bodily from the food-control bill, and there is no analogy between food production and mining and the manufacture of metals; that is, from my standpoint. If I were charged with that responsibility I would suggest an entirely different line.

Senator SHAFROTH. Give us your suggestions. We are seeking light, all of us, and all of us want to do the same thing; that is, get increased production at reasonable prices.

Mr. DAY. In the first place, I am assuming that the Shipping Board will ultimately commandeer all the shipping, and it is with that idea in mind that I made the original statement that I believed they could take all the ships, and, with the exception of the three metals formerly mentioned, we could in a very short time produce all of the ores, metals, and minerals required within these United States or within the neighboring territory—that is, within North

America—with the possible exception of manganese, tin, and platinum, tin and platinum absolutely, and as to manganese, the production is debatable, not that I am technically an expert, but that opinion is based on the best information, observation, and testimony before this and the other committee and statements of other people given me.

Relating to the method, I would beg to suggest that if it is thought not expedient at this time to go into the matter of a tariff, which would shut out the importation of certain foreign metals and minerals such as antimony, for instance, and tungsten and arsenic (with which foreign products we can never compete on even terms), I would suggest a system of bounties or premiums or bonuses be established whereby the trade in the way of supply and demand would not be interfered with, that would be given by the Government to the producer of any specified metal over a period of years.

Senator SHAFROTH. Would the Government get back that bounty in any way, shape, or form?

Mr. DAY. It would not, in my judgment.

Senator SHAFROTH. It would be a premium?

Mr. DAY. It would be a premium, an agreement for a bonus, if you wish to call it such, for the hazard, risk, and enterprise and brains, whatever you might call it, which would be involved in people going out and producing these metals. My own idea is that is not solely to meet any alleged emergency, but mainly to so stimulate these industries as to render this country independent in the future.

Senator SHAFROTH. You mean you would give a bounty on each ton of ore produced, or what would be your plan or system?

Mr. DAY. Yes; it would depend on the mineral. On platinum it would be per ounce; on tin it would be per ton, in whatever method the trade handles those metals or minerals or materials—so much an ounce, a pound, or ton.

Senator SHAFROTH. How long would you have that bounty continued?

Mr. DAY. That is simply a matter of opinion or judgment. My own idea, under all the conditions that we have now, our present information as to the extent of the war, would be from three to five years, in order to enable an operator or an investor, a prospector or a miner to get a fair trade chance.

Senator SHAFROTH. Then that would compel the Government, no matter how low in price these minerals should fall after the war, to continue this for a period of three or five years?

Mr. DAY. It would, Senator?

Senator SHAFROTH. Have you calculated what might possibly be the liability of the Government under those circumstances?

Mr. DAY. I have not. I assume that would be done by the experts who would be charged with the drafting of the bill or bills, such as is done now by the Treasury Department in regard to taxation, and excise taxes on various articles upon a very large scale.

Senator SHAFROTH. Would there be any check at all upon production if the war should close?

Mr. DAY. There would not, except the calculation which would be made as to the general range of supply and demand, in the particular metals or minerals.

Senator SHAFROTH. Then a bounty system under that plan would be really a minimum price fixing, would it not?

Mr. DAY. I do not so consider it, Senator. It would not interfere at all with the natural supply and demand, except to stimulate the supply, and just as soon as that stimulation occurred the regular market price would fall to a certain extent and tend to equalize the bounty.

Senator SHAFROTH. If it produced increased production?

Mr. DAY. Yes.

Senator SHAFROTH. But the difficulty to my mind there is the fact that you may have an enormous liability upon the part of the Government from a bonus which will operate from three to five years.

Mr. DAY. I do not so esteem it, Senator, in view of the huge figures we are accustomed to now. Congress and the administration think nothing of passing a law overnight which will take from a billion to ten or fifteen billions of dollars, and I consider this scheme is really a bagatelle compared with anything of that nature.

Senator SHAFROTH. I can see that it might turn out so that there would be no liability except the absolute bounty which is paid upon the number of tons that are taken out and used by the Government or used in the commerce at a fair price, but the difficulty, in my mind, is that if it keeps on from three to five years and the price of the material should go down to a comparatively low amount, they might operate the mines solely for the purpose of getting the bounty.

Mr. DAY. It should not be be fixed high enough to justify that. It should only be a fraction of the average price or going market price.

Senator SHAFROTH. Take tungsten—what would you say would be the actual operation of your system on tungsten?

Mr. DAY. I could not say specifically, Senator, for the reason I have no experience in the mining or manufacture or sale of tungsten; but I have been informed that tungsten can be produced for one price in one Western State, say Nevada, and for a much higher price in Colorado. If it is vital to the industries of this country to bring out a certain quantity of tungsten, it seems to me the difference between what it costs to produce tungsten in Nevada and Colorado is negligible. In other words, I would give a sufficient price to bring out the production regardless of whether it came from Colorado or Nevada. If it came from Nevada, and the producer there made a larger proportion of profit, well and good. We have the excess-profits-tax system and with excellent prospects of having the excess tax increased in the very near future.

Senator SHAFROTH. By the excess you mean the war-profits tax?

Mr. DAY. Yes, sir; I do. The program, Senator, which has been enumerated here—I mean in Congress and out—tends at present to bewilder the mining business or industry. They do not understand it; they can not see the necessity for it; and it has the effect of slowing and repressing production right now instead of stimulating it, and any of these new, artificial schemes will have a tendency to do that. The less we interfere with it the better.

Senator SHAFROTH. Then, your natural tendency is not to pass any legislation whatever except as to the three items you refer to?

Mr. DAY. No; I would take cognizance of all the items necessary. For instance, we will start with antimony, the first on the list. There is no question that there are all kinds of antimony available in this country with the proper degree of stimulation. There is no question there are all kinds of arsenic, thousands of tons being wasted every day in this country which can be saved with a sufficiently increased price; there is no question there are millions of tons of sulphur being wasted every year and have been from time immemorial ever since we have been manufacturing. It can all be saved if we care to go to the expense of doing it. The only difference I suggest with the program is one of method, of getting this domestic development, and perhaps the one of judgment as to the extent of our resources in certain lines, such as chrome and manganese. My information is there are ample supplies of those available, providing we are willing to pay for them.

Senator SHAFROTH. Take manganese, what would you say as to your system in regard to manganese, as to its operation? You would have a bounty on the production of it per ton?

Mr. DAY. Yes, sir; a bounty per ton sufficient to bring out the domestic production necessary.

Senator SHAFROTH. And it would provide that all the tungsten produced during the three or five years should be entitled to that bounty?

Mr. DAY. Yes; I think that is only fair. That, of course, is a matter of opinion. I might be mistaken, but that, broadly, is my judgment.

Senator SHAFROTH. I can readily see how you have got to have some kind of time limit in order to get men to develop new properties. There is no doubt about that. What do you think of the proposition of the Government buying these ores and allocating them and disposing of them to the commerce in the markets at an average price, based upon what it has paid for these ores in the past?

Mr. DAY. I think the idea is almost visionary; impracticable to the last degree.

Senator SHAFROTH. More so than a bounty?

Mr. DAY. Very much more so.

Senator SHAFROTH. The principal advantage that I can see, so far as the Government is concerned, in the proposition of buying the ore is the fact that its liability becomes absolutely nil. The amount of contracts for the number of tons of ore that it makes and the miner's liability or the miner's position is exactly defined by the price which he sets in his own contract for the production of so many tons. Those two factors make it a more certain proposition as to the liability of the Government than any open proposition of a minimum price or a bonus, because we do not know how many people may go at the thing and how many more million tons we may get than we want. I should like to know all the points that are for or against either of these propositions. What are the objections you have to the Government having a revolving fund and making a contract with the manganese people or the tungsten people for the supply of the exact quantity of those materials that will supply the trade?

Mr. DAY. As I said before, I think the matter from a business standpoint is more or less impracticable; that is, it is a clumsy and

a difficult matter to work out and it would tie up a great deal more money than under the bounty system which I suggest. Naturally, the bounty proposition would have to be worked out carefully. If it amounted to anything I would say the Bureau of Mines and the Geological Survey and the United States Tariff Commission, the experts in the Treasury Department, and the committees of Congress who have handled those matters for more than 100 years would be quite competent to thrash it out in conjunction with the people in the trade they would see fit to call in. Something along the lines of a tariff bill.

Senator SHAFROTH. But you can readily see that there are two elements of uncertainty in your scheme, namely, the element of the Government paying out a large quantity of money which it can never get back or never try to get back, and the other is in the fixing of a period of time that will induce these people to operate their mines. Now, in the other case, of buying absolutely the ore, those two elements are eliminated, making, therefore, the liability of the Government practically nothing, because it can average these ores and sell them in the market and it reimburses itself for all that it pays out.

Mr. DAY. Yes; if that is the same old proposition there I do not believe it can successfully be done and let the Government out whole. Excuse me if I use that sort of language, but it is with the utmost respect, but your idea really amounts, as I understand it, to fixing a price—to make a contract for a certain quantity.

Senator SHAFROTH. Yes; a purchase of a certain quantity.

Mr. DAY. Let us work that out: Here is one man that can sell his product at a fixed price and make a fair profit on it, and here is another in the next county, or just across the river, that has to have a higher or a lower price, as the case may be. That is one of the things I think impracticable to apply.

Senator SHAFROTH. It would be if you set a price and say the Government will buy all the ores, or a certain quantity of ores, from any mines that may produce them; it fixes its price for each particular mine, for instance.

Mr. DAY. Exactly.

Senator SHAFROTH. Now, it is practically a bid, who will furnish 100,000 tons of manganese, and at what price, and the bids come in and the producer accepts the Government's bid. If there is not a sufficient quantity bid for, they then take in the next lowest bid, and go on down until you get the quantity that you desire. There is not very much uncertainty about that. You do not have to figure about whether a man is 10 miles or 1 mile from the railroad, or whether he is right on the railroad. That is for him to figure when he makes his bid.

Mr. DAY. I think, Senator, there is the hugest uncertainty about it.

Senator SHAFROTH. Why?

Mr. DAY. Who is going to guarantee that these gentlemen that blithely take these contracts are going to fill them? It takes a large amount of capitalization, installation of equipment, and some years to develop it in order to commence the work; you can not get your 100,000 tons in six days or six months, and who will guarantee the Government that that person's calculations are correct; that he will come through, as we say?

Senator SHAFROTH. The Government requires a bond in nearly every instance for the supply of materials it buys, that the contractor will, within the time prescribed, produce and deliver to the Government a certain quantity. They might have a little looser rule than that, but nevertheless it can approximate certainty, it seems to me. For instance, one man comes up and says, "I can produce within the next six months, the next year or next two years, 10,000 tons of tungsten." "Very well, we will enter into a contract with you that you will supply at the rate agreed upon, so much per month or so much per year, or after the first six months, so much," and thereby you can establish some certain things with relation to it, and thereby limit the liability of the Government very much. If you have a blanket provision and do not know anything about the quantity that is to be produced until it is presented and thrown on you for purchase or guaranty, it seems to me it makes it very indefinite.

Mr. DAY. In a certain sense it does, but I believe it will work out practically much better than the other proposition. The proposition of the Government buying a fixed quantity at a fixed price, it seems to me, the Government is the only responsible party in such a large contract, and there are probably only one or two people in America responsible enough to go upon such a thing as that. For instance, take the Anaconda Mining Co., a contract they should make to deliver 100,000 or 500,000 tons of manganese, or one-sixth of the entire American production, which I understand they are prepared right now to do anyway with a fair price, that would be a responsible arrangement, but take tungsten, antimony, and some of those minor metals, and you would be doing business with some 20 to 30 people scattered all over the western territory of the United States, working under dissimilar conditions in almost every respect, and it seems to me that the proposition of a premium, allowing the law of supply and demand to have its usual ebb and flow, simply stimulated by the addition of a small premium—of course, it should be done with discretion, there is no question about that, but I believe there is plenty of ability in Congress and in the departments of the Government to so frame a measure that it would be entirely satisfactory.

Senator SHAFROTH. Let us try to get at the concrete working of your system. Take manganese. What premium would you offer to the miner?

Mr. DAY. I would not attempt to fix that. I would be governed by the statistics on the matter.

Senator SHAFROTH. Do you think anybody can govern it with any degree of fairness over a period of three to five years.

Mr. DAY. Unquestionably, I do. It has been done in fixing a tariff on various and sundry articles over long periods of years and has worked out very successfully. That is my judgment.

Senator SHAFROTH. How many tons of manganese are required per year?

Mr. DAY. I think it is a very large quantity. It is, I am informed, 800,000 tons. I should like it to be understood, Senator, that I am not testifying as an expert in manganese. My business is mining and smelting lead and silver ores produced in the Pacific Northwest and refined in Pittsburgh.

Senator SHAFROTH. I am not wedded to any particular theory in this matter. I want to find out the best, and if you have the best we want to adopt that.

Mr. DAY. I thank you.

Senator SHAFROTH. And I am asking these questions solely for the purpose of having you make an answer that I could make if I were to take your theory.

Mr. DAY. I am very keenly interested, Senator, as a citizen and as a taxpayer.

Senator SHAFROTH. I regard the element of war tax and excess-profits tax as one of the great regulators, and I am very loath to depart in any manner from the operation of the principle of supply and demand, but I want to take an instance of some kind and try to have you work it out, and as to manganese how much, or approximately how much, of a bounty you would pay for the production of a ton.

Mr. DAY. Senator, I hardly thing that is a fair question to ask me, as I have not the requisite information to venture an opinion as to the amount. As to the principle, I feel sufficiently opinionated to do so, because it applies to all metals concerned. Let me answer that in another way. Some years ago I was down here before the House Committee on Ways and Means, I think, in regard to the tariff on lead, and in the course of an interview with a colleague of yours, Senator Cummins, of Iowa, he said, "Mr. Day, how do you determine that the rate of 1½ cents a pound, $30 a ton, on lead is a fair rate for the tariff?" He said, "Some of you gentlemen can make money at 4 cents, some at 5 cents, some at 6, 8, 9, and even 10 cents; then the higher cost properties can not run at a certain rate." I conceded his point was well taken and my reply was that experience had demonstrated that that point which produces a certain price for lead in this country was the important point, that is, that when we just balanced our producing long enough to supply our consumption within a swing of 10 per cent either way; and that, in my judgment, would be what you would call the critical point.

Senator SHAFROTH. Yes; but in that matter you are figuring not upon a liability upon the part of the Government, but really upon a custom duty that would be to benefit the Government. The proposition of a bounty comes in which may swamp the Government; that is the trouble, and the theory that we have entertained heretofore in this committee has related to a kind of reimbursement to the Government, so that the Government would be at no loss, but there would be a limitation by reason of a minimum price and a maximum price, and an attempt to sell to the Government to supply the needs of these various manufacturers. I can see that you would not have to fix a bounty as high as if you would follow out some of these other theories, but there are two elements of uncertainty in a bounty, and one is what will produce the amount, and then how long it shall continue.

Mr. DAY. Yes, Senator.

Senator SHAFROTH. Because it may involve the Government in hundreds of millions of liability. That is the difficulty about your solution of the problem to me.

Mr. DAY. It would take a considerable amount, but, as I say, as amounts are going now I consider it a mere bagatelle. I do not believe it would take a billion if it is handled intelligently. Of course you can make a mess of anything that is not handled properly. I believe it would be a huge mistake and would defeat its very purpose to attempt to go into the fixing of prices for metals and minerals. Personally I consider our experience in that line has been a failure so far. I think my reading goes to the effect it is a failure in Germany, where it originated, and in England, where they followed suit, and in France and in Italy, that it is better to trust to the ebb and flow of supply and demand.

It may take a little more time to adjust itself, but it is fairer and more certain in every respect. We have had two conspicuous instances in the metal trade since the European war broke out—in lead and zinc. Owing to certain conditions the supply of zinc was greatly stimulated. There were all kinds of zinc ore in this country, but there was not the manufacturing equipment to handle it, and the consequence was the price of zinc went up out of sight, and I think men jumped into the building of large reduction works and almost, you might say, immediately, compared to national events, they brought down the price so low that zinc is practically a drug on the market.

The same thing happened to lead a short time ago from a different cause. The price of lead went up to 12 cents a pound in New York City. There was not only an ample supply of lead available, but it was on the cars in transit; but we could not deliver it, could not get our bullion to the refiner, and could not get pig lead out of the refineries after it was refined, and the consequence was that spot lead in New York went out of sight. Just as soon as those conditions were equalized and deliveries were possible the price of lead went right down as low as 50 per cent in 60 days, and I do not know but 30 days.

Senator SHAFROTH. There is no question but stimulation occurs to a large extent and we will reduce the price unless combinations in restraint of trade should be dealt with in a different way, and by the excess-profits' taxation, and I hate in any manner to interfere with the principles of the operation of supply and demand.

Mr. DAY. Let me say right here that in my judgment as a traffic man in handling hundreds of thousands of tons of base metals and minerals that we have had only one real trouble in this country, and we are going to continue to have that unless some more radical measures are taken to relieve it, and that is transportation. We have not got the facilities to handle the business offered, and we can never have them until the tonnage formerly transported by ship has sufficient rail facilities to move it overland. These railroads were built for commercial and not for military purposes, and they failed to respond, and we are confronted with that right now. It so happens I participated very recently in a consultation with the Railroad Administration officials as to the movement of copper, lead, and zinc, and it has been put up to the copper, lead, and zinc men to so allocate their tonnage and their production and the handling of their material that they can get along with a minimum of equipment, for

the reason that we are facing a more serious congestion than ever yet existed. That is at the bottom of the trouble in all our business in the United States, and in my humble judgment is the only trouble; that is, compared with the great scale we are doing business on. That applies to the emergency which many gentlemen believe to exist in the so-called rare earths and minerals.

Senator SHAFROTH. It is your judgment that outside of manganese and platinum and tin there should be no legislation concerning the other minerals at all?

Mr. DAY. No——

Senator SHAFROTH. And as to these and others that might be included, you believe in the bounty system and not the price-fixing system?

Mr. DAY. Yes. I think something should be done, but I think as against the price-fixing proposition, either maximum or minimum, though I would prefer establishing the minimum rather than the maximum, and let the ebb and flow of supply and demand take their course and it will adjust itself.

Senator SHAFROTH. Let it lower and increase the price as it is worth in the market?

Mr. DAY. Yes. Coming back to tin and platinum, there are some things which must be imported regardless of the need for ships, anyhow. For instance, we will take jute, from India. I think that moves in large tonnage, and we must have it; some ships might run on those lines, and the small amount of arsenic or graphite and mica and those minor metals imported as only ballast. They naturally go to make up the ship's load, anyway. Shipping men tell me that none of these so-called rare earths or metals and minerals as imported in great shiploads, as iron ore is transported across the Great Lakes; but in regard to tin and platinum, something has got to be done along this line if you are going to stimulate those two absolutely essential metals.

Senator SHAFROTH. What do you mean, stimulating them in what manner?

Mr. DAY. I would offer a bounty, so much an ounce for platinum and so much a pound for tin.

Senator SHAFROTH. Would you exclude importation?

Mr. DAY. Oh, no; I would encourage importation. We must import tin.

Senator SHAFROTH. You would give a bounty to the importation as well as to the home product?

Mr. DAY. I would by all means. It seems to me we must do it. It seems to me that is the only real emergency now, those two metals—tin and platinum. We have got a supply of all the others, maybe large or small, but we have some supply, and I believe all the others can be greatly stimulated, enough to supply our requirements, but in tin and platinum we can not possibly do it, and we should be moving now in getting them. If the military emergency and the domestic emergency is anywhere nearly as serious as many reputable gentlemen think it is, and which I concur in, because we do not produce any of those worthy the name, it seems to me that the bounty method is the only method which would apply.

There is another matter to which it seems to me some attention should be given by somebody, and that is the policy of the Government, which has heretofore existed and now exists, about the harsh, unfair, unjust, and unnecessary policy that has existed of bewildering and annoying and mistreating the producer and the buyer.

Senator SHAFROTH. What do you mean by that?

Mr. DAY. I mean this, that the Government does not keep its engagements as business men. It does not pay promptly for the stuff it contracts for, and it throws an unnecessary burden, in some cases almost a fatal burden, on the unfortunate citizen. The Government comes in, and, setting aside all patriotic motives, insists on the citizen, the producer, doing so and so. For instance, in the lead trade it insists on the lead people furnishing a large proportion of their product last summer for 3 cents below the market price. It established a fixed price for a certain quantity of lead, and when the market fell below that price it welched on its agreement and insisted on a settlement made at a lower price, and, of course, it was made on the lower price. I submit, Senator, it was not fair. That is one item.

Now, the whole policy of the Government, especially in respect to metals, has been not a harmonious one and not an encouraging one, but a harsh, ugly one, a threat all the time. It is not good. I do not feel personally hurt, because we have gotten along very nicely, but it does not stimulate production, and it is a matter of sentiment and a matter of policy I find very hard to define, but that one incident will give you an idea. The zinc trade has a large complaint along those lines, and the Government has threatened time and again to fix the price; it has fixed a price at times for certain grades and not for other grades, and the consequence is that the lead and zinc industries both have been between heaven and earth, suspended like Mahomet's coffin; they do not know where they are. That is a very harsh condition. The result is of all this that the production of lead has shrunk for the first quarter of this year 25 per cent, and, in my judgment, the first of this year will show a shrinkage of 33 per cent. I speak of approximate figures only. These are facts. A large part of it arises from the application of a mistaken policy.

Senator SHAFROTH. Interfering with the principle of supply and demand?

Mr. DAY. Yes; and interfering with the rules and laws and customs of the trade which have grown out of conditions in the past and which can not be changed overnight or by passing a resolution.

Senator SHAFROTH. Is there any other method of increasing production that you would recommend?

Mr. DAY. There is not, Senator. I believe in the bounty system first; as a second choice, in the minimum-price proposition. But in principle I am opposed, as a practical man, to an attempt to apply to the immense range of the mineral industry—that is, to the number of metals and minerals concerned—the method of the bill. For instance, you will take wheat; that is only one commodity; it is wheat whether it comes from Maine or California. The same way with coal; coal is coal wherever you get it. But here we have a list, I think, of 40 different metals and minerals occurring in more or less

abundance or scarcity under totally different conditions, handled by different people with various amounts of capital or no capital at all.

Senator SHAFROTH. What do you think of the licensing system that is provided in the bill?

Mr. DAY. As to the prospecting and mining, the stimulation of the development of raw material, I think it would be entirely impracticable. As to the handling of these materials after they have been reduced to a certain extent, such as pig lead and bar copper and zinc, it might possibly be done, though I believe it is wholly unnecessary. The Government, as I understand it, and as I have experienced it, has ample authority and ample power to do everything that is necessary or expedient.

(Thereupon, at 12.15 o'clock p. m., the committee adjourned until Friday, May 24, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

**FRIDAY, MAY 24, 1918.**

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met at 10 o'clock a. m., Senator Charles B. Henderson (chairman) presiding.

Present: Senators Shafroth and Jones of New Mexico.

Also: Dr. Van. H. Manning, Director of the Bureau of Mines, and Dr. George Otis Smith, Director of the Geological Survey.

The CHAIRMAN. Mr. Day, you may proceed with your statement.

## STATEMENT OF HARRY L. DAY (Resumed).

The CHAIRMAN. Mr. Day, yesterday you referred to the word "bounty," and the word "premium" was also used. Were those two words used in the same connection with bonus?

Mr. DAY. Yes, sir; that was my idea, that they were synonymous, as used in this discussion.

The CHAIRMAN. You gave a general statement yesterday and in answer to certain questions asked by members of the committee pointed out in some particulars your objection to this bill. As I understand, you testified on this bill before the House committee when it was being considered by the House committee?

Mr. DAY. That is correct, Senator.

The CHAIRMAN. I quote from a statement made by you before the House committee:

> I also stand here in that connection to indorse the objects which I understand the committee seeks to attain through the bill, and that is the securing for the uses of the Government or manufacturers under the Government of certain so-called rare metals and earths which threaten to be short. We are in entire sympathy with that idea. With the method sought to be followed, we are not altogether in sympathy, and that is the only point at issue between us.

That was your statement as it appears in the House record.

Mr. DAY. Yes; I think that in a general way represents not alone my own ideas but the attitude generally of the western mining industry.

Now, as respects my present view, I might say that I undertook to explain yesterday the views set forth there. We predicated the understanding or belief on assertions that had been made, of military necessity which existed, or stringency of production of those metals, but on further investigation, between the time of that hearing and this meeting, I have modified to some extent those views to this

extent: That on further investigation and observation and my information received at those hearings and from the Congressional Record, I have had occasion, as I say, to modify those views to a certain extent. In brief, I take the position that the military necessity or stringency or emergency is not nearly as acute as I had apprehended from statements made to me.

The CHAIRMAN. You have given this bill thought and attention, have you not?

Mr. DAY. In a way; yes, sir. I have looked it over very carefully. There have been considerable changes made in it. I am referring now to the Foster bill.

The CHAIRMAN. In your testimony before the House committee you were asked regarding the section to prevent hoarding and combination, and to that question you stated you had no objection.

Mr. DAY. No, sir; I feel that it is immaterial. There is no hoarding of metals, as far as I am aware, in comparison with the grain, flour, and foodstuffs and things of that sort. In my judgment, it is practically impossible. The tying up of large amounts of metals, the storage of a large bulk of metals in manufacturing conditions, is in a commercial sense an impossibility. I feel that the hoarding position is negligible. It will not hurt anything, and it will not forward anything.

The CHAIRMAN. In other words, you consider there is quite a difference between the mineral industry of the country and the agricultural industry, and that the two can not be handled alike?

Mr. DAY. For the purpose of this measure we can see no analogy or comparison on any practical basis. They can not possibly be handled alike.

The CHAIRMAN. With regard to some agency of the department, the Government regulating and handling the distribution of these metals, I note that in the question asked you regarding that matter you said you had no objection to that at all—you said, "I think that should be done."

Mr. DAY. Well, that answer was based, as I say, on the presumption that an acute military necessity or commercial stringency or emergency existed, and, as I say, I have had occasion to modify that to some extent. On principle I am opposed to the fixing of prices, not alone in minerals but any commodity. I believe it is not well grounded, and that it has failed and will ultimately fail for this reason, that a price fixed on any commodity, in the last analysis, must involve the fixing of a price on every element of the component cost of materials that go into that commodity. I apprehend that that is such a huge undertaking that it will never be seriously attempted in this country or in any other country, but without it I am of the opinion that the price-fixing scheme will ultimately fail. I believe it has failed, even in our own limited experience, and, as I say, on principle I am opposed to it. I still feel that way. If, on the other hand, it was demonstrated that a great military necessity existed, whereby for temporary and for certain immediate purposes it was necessary to fix a price, as has been done, for instance, in copper, I feel that it would be wise to waive the principle in favor of the exception.

The CHAIRMAN. In your opinion, are there some metals and ores, mentioned in this bill, that you feel Congress should legislate upon?

Mr. DAY. Yes, sir; as long as the matter has been undertaken, I find in my own mind quite a difference in point of view in respect to the degree of stimulation which has been suggested in comparing, for instance, the plan of establishing a revolving fund which contemplates the purchase outright of large tonnages of ores, minerals, and metals, and storage and subsequent distribution of them to consumers.

I think that is a fair statement of that plan, is it not? And I apprehend that in comparison with the plan of offering a bounty or bonus or premium, that first plan is much less practicable. It seems to me that the first plan, the revolving fund, will involve an enormous business undertaking on the part of the Government. It will require enormous storage capacities at many points in the country and it will require attention to insurance and to transportation, and matters of that sort, wholly without the province of the Government officials. That is, I apprehend that people intrusted with that are not, by training or temperament, accustomed to that sort of business. On the other hand, the bounty or bonus plan will not involve to any such extent enlarged duties or powers on the part of the Government. The production of the so-called rare earths, minerals or metals, which are taken into account under it, will be done on a very small scale; that is, only proof of production would be required in order to receive the premium. The Government would be relieved from handling the product altogether. It would be done, according to my view, almost exactly as the base metals, copper, lead, and zinc are now handled by the Government.

The Government departments do not touch them directly, with the exception possibly of those manufacturing branches in the Army and Navy and Ordnance Department which have done this from time immemorial. A vast amount of these base metals are diverted to the regular plants which always handle them, simply under governmental supervision. It is simply a matter of bookkeeping, and very little bookkeeping, at that. I unfortunately have not got the chart here showing the method of distributing lead; it is very simple, being handled by very few people. Those charts are furnished monthly by those lead people who are intrusted with allocating the lead to different plants and then distributing to different manufacturing plants. It woorks out very simply and easily and at a minimum cost, and I believe that some bonus or premium plan could very readily be worked out which would accomplish the object sought to be attained by all concerned.

The CHAIRMAN. The bill provides for making contracts between the Government and the producer of various metals mentioned in the bill. Are you familiar with that section of the bill?

Mr. DAY. I believe that section, Senator, as originally formulated—and I might say I have not compared the last bill or the bill as amended by the House closely with the original bill, but the original bill, which was much more voluminous, was the one to which I paid my attention prior to my appearance before the House committee. I understand and my judgment is that the bill has been very much improved since the hearings.

The CHAIRMAN. You understand that no bonus could be provided unless a contract was made?

Mr. DAY. I think that is the understanding.

The CHAIRMAN. Does it not seem to you that power to provide for a bonus would be plainly implied by the power to make a contract?

Mr. DAY. Well, I would hesitate to pass my opinion on that matter, which seems to me a purely legal one. As a business man, I should say it would, but again, as a business man, I should say that feature of it would be objectionable.

The CHAIRMAN. If you provide for a contract and allow the administrator of the bill to enter into contracts, the contract would cover whatever price the administrator thought was necessary in order to encourage production and get results?

Mr. DAY. I think it would, yes; but, as I say, I think the matter of contracting would be objectionable. Speaking of bounty—and this, of course, is a general plan; I have not worked out any budget or attempted to do so or sought to apply it; it is simply a matter of judgment based on observation and experience of a lifetime and the information which I have received here, particularly before the Senate committee and the House committee and the debate in the lower House and general information which I have received from other men in the trade, successful operators and producers of metals, whose judgment I have a very high regard for—I would simply offer a bonus for all metals or minerals which would be produced covering a certain period on satisfactory proof that they had been produced; that is, that they would be rendered available for domestic consumption.

The CHAIRMAN. That bonus would have to be provided for in a contract, of course, of some kind?

Mr. DAY. Not necessarily, I think.

The CHAIRMAN. You would not just leave it open and have the administrator say, "I will pay you a bonus," and the producer rely upon that?

Mr. DAY. Yes; I would, within certain limits. Those limits would be in the framing of the bill, where such price or bonus would be fixed, as by calculation or estimate, which must be done in any event on any plan, as to what production and consumption would be required within a certain time. That relates solely to the emergency phase of it. It seems to me we are not looking at the greater item involved, which is stimulation of production of these dormant minerals or metals for use not alone in the present emergency, but to render our country entirely independent of foreign sources of production after the war when normal conditions again prevail.

The CHAIRMAN. But, in your opinion, would it not have to be handled in writing, as to the bonus the Government would pay?

Mr. DAY. It seems to me that it would be wise to fix the amount of the bonus, and fix the percentage of value, or the cents per ounce, the dollars per ton, or per pound, according to the relative value of the metal or mineral involved, but not limit the quantity. It seems to me that is a mistake in this regard—I am speaking now as a practical man:

Let us say that we go out on the market and let a contract for 100.000 tons of manganese ore at a satisfactory yrice. Now, a practical question comes up immediately, how is that ore going to be delivered? It can not be delivered, 100,000 tons, in a lump—the contractor has not got it, he has to develop it and treat it and put it in

marketable form, and deliver it at some point satisfactory to the Government. I am assuming a hypothetical situation now, and that it is bound to cover a period of time equal probably to the period I suggest as to the bounty proposition, of from 3 to 5 years; in other words, that it will cover the period of development of the man's property and of his equipment and of his production and of amortization of his investment. That also involves another factor, the question of its conflict with what excess-profits tax there may be, if any. My understanding of the interpretation of the advisory board is that they do not look with favor on a shorter amortization period of less than 10 years, which under almost any condition as a mineral proposition, would be prohibitory.

The CHAIRMAN. Now, as a practical man, let us see just how you and the administrator of the bill would handle this matter. Say you are a producer of manganese ores, and the Government needed, according to your illustration, 100,000 tons. The Government would go to you and say, "We want 100,000 tons of manganese ore; can you furnish it?" You know that you can furnish it. Now, the first think would be to ask, "What is the price of manganese ore?"

Mr. DAY. Yes, sir.

The CHAIRMAN. Secondly, if there was going to be a bonus paid, how much would the Government allow you as a bonus to be added to this contract price that you and the Government are going to agree upon? Would not that follow as the next consideration?

Mr. DAY. Yes; I presume so.

The CHAIRMAN. In order to insure quick delivery as soon as you could get it. Now, that bonus would be added to the contract price, and you would then insist, would you not, as a business man, that the Government enter into a contract with you to deliver the 100,000 tons of manganese ore within so many years at that price?

Mr. DAY. Well, looking at it from the one side as a producer, of course, of that ore—which I never expert to be—I would want to drive, as a business man, the best bargain I reasonably could; but looking at it—and I am trying to look at it from the standpoint of what you might call the public good; that is, recognizing that the individual who undertakes this hazard of producing a rare metal or mineral must be recompensed suitably for it to give him a profit—in other words, a commercial existence—and recognizing also that the Government must have its rights protected, and that the industry which receives the benefit of the production must be considered in the matter—I would approach it in a little different manner.

The CHAIRMAN. Just explain to the committee how you would approach it, and what you would insist upon the Government doing in order to guarantee you this price for any definite period.

Mr. DAY. I would not favor the Government guarteeing a definite price beyond guaranteeing a bonus or premium, which would be a certain fixed fraction of the market price.

The CHAIRMAN. Would not that bounty or bonus, when when agreed upon, become the contract price for the delivery of the ore?

Mr. DAY. No, sir; I do not so understand it.

The CHAIRMAN. What would it become; what would you call it?

Mr. DAY. I would simply call it a bounty or bonus, as well as reduce it to a very small per cent. Out West the counties, and States, I

believe, in some cases, pay bounties on the skins of wild animals, and those animals are destroyed by hunters and farmers and trappers, and the pelt is produced as evidence of the destruction of the animal, and the county or State pays a certain bounty. Then the hunter takes his skin or carcass and goes out and sells it to anybody in the market for what he can get.

The CHAIRMAN. But in that particular case the law says that the county will pay for, say, a coyote scalp or a lynx scalp. Would you have this bill state specifically what the Government would pay for these ores?

Mr. DAY. I would; yes, sir. That is, I would have it specify what bounties they would pay. The bill would not specify what the price would be. The market price would be left undisturbed to respond to the regular current of supply and demand; but supply would be stimulated by this artificial support; it would be an addition to the regular price which the Government would pay in its sovereign right as a government to stimulate that particular industry.

The CHAIRMAN. Then, would you treat all these ores and metals alike as regards the bounty?

Mr. DAY. Oh, no; as regards amount, that would be calculated naturally upon just how much it was estimated it would take of bounty or premium to bring out the required production from domestic sources. When I say domestic sources, that does not refer to tin or platinum. I think a suitable bounty should be fixed to bring into this country ample stocks of those metals. That, it seems to me, requires a different consideration from the others.

The CHAIRMAN. Then you would leave it to the administrator of the bill as to what bounty should be put on for the ores?

Mr. DAY. No, sir; I would not do that. I would have Congress pass a bill placing a bounty over a term of years.

The CHAIRMAN. Take tungsten, for instance?

Mr. DAY. I would fix not a price, but a bonus.

The CHAIRMAN. What would you say as to the bonus on tungsten?

Mr. DAY. At so many cents a pound or so many cents a unit, according to the custom prevailing in that trade; a sufficient amount to bring out from the domestic production the quantity of tungsten required for any industry using it.

The CHAIRMAN. Say that tungsten was selling at $25 a unit; it is about that to-day; you would have a certain number of cents added to that market price as a bonus, would you?

Mr. DAY. Well, I would have to use that (the market price) as a basis of calculation. My idea is that the Government would not concern itself with the market price except as a matter of calculation or a basis of estimate. For instance, the experts of the Bureau of Mines and Geological Survey, the Federal Trade Commission, and the Treasury Department would get together, as I understand their practice is on all these money bills, and formulate a bill. They have statistics at hand and they have vast records available, and in collaboration perhaps with mining men who are available, and heads of the great enterprises, whose judgment is good, they being men of high caliber, such as Mr. Schwab and Mr. Ryan and Mr. Farrell of the Steel Company—I believe a bill could be written in 30 days, a workable, practicable, equitable bill.

The CHAIRMAN. Then you would limit this bill to just metals and ores that are absolutely needed now, would you?

Mr. DAY. Yes, sir; I think perhaps the scope of this has been covered by the report of the Bureau of Mines and the Geological Survey—perhaps some are not included. We know that magnesite is not a scarce metal, that there is a tremendous tonnage available, but I have reference particularly to such items as arsenic and antimony, of which large dormant tonnage is available; it simply amounts to the question of price as a commercial proposition, of allowing a sufficient price to the producer to justify him in undertaking the operation, with sufficient energy so that he can come across with the tonnage, not alone presently but, as I understand it, the big item is to stimulate the production so that we will never be found in the condition that our country has been found in this present emergency.

The CHAIRMAN. What harm would there be in allowing all these metals to remain in the bill so that whoever administers the bill could, if necessary, at any future time, have the power to do the same things with these metals that are not now needed as to those that are needed?

Mr. DAY. I believe that probably that would be a wise thing to do.

The CHAIRMAN. Simply leave them in the bill, and if there is no action necessary, if production is sufficient, there is no need of making any rules or regulations governing them, but just let the law of supply and demand take its ordinary course with reference to those metals that are not so short now?

Mr. DAY. I conceive your point of view, Senator, that there is no harm in it.

The CHAIRMAN. By leaving them in the bill, do you think it would create an unsatisfactory condition and tend to discourage the production of those metals?

Mr. DAY. No; it does not seem to me it would alter that to an appreciable extent, but as a business man I am not accustomed to disposing of anything that is not necessary. Take the item of magnesite, for instance. From my point of view, and from all the evidence at hand, there is no need to consider magnesite whatever. The tonnage is ample and ready to be produced, and it will be produced the instant the market justifies it, and the market will justify it whenever the consumers' need becomes great enough.

The CHAIRMAN. That is true to-day, but next year, say, a different condition may exist, and if magnesite was not in the bill they would have to go to Congress to secure more legislation to cover that particular metal?

Mr. DAY. Yes, sir.

The CHAIRMAN. And if it was in the bill they could then handle it without any further action on the part of Congress?

Mr. DAY. Yes, sir. But on that assumption you might make the same argument with respect to copper, lead, and zinc, steel and iron of which vast tonnages are now forthcoming, and from all appearances will continue indefinitely. There is no doubt in my mind that unless the policy of the Government is changed—I do not mean commercially now—I mean the broad question of treatment of the metal producers, that we will in the near future see a serious shortage of copper, lead, zinc, iron, and steel. That is not a question of price; it is a question of policy. The price fixing, the policy of price restric-

tion, of price fixing results in restriction inevitably; it can not help but do so. You can not put a mining industry in a straight-jacket and get results. Our experience within the past year amply proves it. For instance, the large copper producers are now producing copper and selling it at some profit at 23½ cents a pound. The small producers, who are in many respects the life of the copper business, the fellows who go out on the public domain and prospect, locate, and develop would, after developing the mines, be put out of business slowly but surely; in fact, not so slowly but rapidly.

The same applies to the lead industry and the zinc industry. Now, we have gotten along; for one short year we have gotten along very comfortably. Large tonnages of all these metals have come forward, but sooner or later we are going to meet the ebb tide on that matter. The amount of development will not continue indefinitely to support present demands, and development is being curtailed. I remember making the remark yesterday that the production of lead has shrunk in the first quarter of this year about 25 per cent as compared with last year, and from my point of view is shriking steadily. I look for the shrinkage from the 1st of July to the first half to show anywhere from 30 to 33⅓ per cent.

The CHAIRMAN. That shrinkage is not due to lack of lead in this country; it is due to price, is it not?

Mr. DAY. To some extent, I should say, to price; but to a large extent to bewildering business conditions which have prevailed in trade by reason of the Government's policy or lack of policy. In the lead trade we have not had even the treatment that the copper people had. Their price has been fixed; they know what they must expect. In the lead trade it has not been so. The Government has threatened that the price would be fixed, but it was not done. Now, that very circumstance threw the whole trade into chaos and bewilderment for the time being.

The CHAIRMAN. Your position then is not one in direct opposition to a measure of this kind but only in regard to the policy which should be followed in regard to such legislation?

Mr. DAY. That is it, practically. I feel that the pressure of the emergency or military necessity has been greatly overestimated.

The CHAIRMAN. What policy do you think would be a wise policy for the Government to adopt to encourage the production of these metals?

Mr. DAY. I will come back to my original proposition of some legislative measure offering a premium or bonus or bounty, or whatever word might be considered advisable, for the production of these metals, which the scientific men have set forth.

The CHAIRMAN. You are not prepared at this time to state what that bounty should be on those various methods?

Mr. DAY. No, sir.

The CHAIRMAN. That would be a matter that would have to be worked out?

Mr. DAY. Yes, sir.

Dr. MANNING. How long should this bounty continue?

Mr. DAY. I am just offering my opinions, Doctor. I should say from three to five years as the shortest period. That would be fair.

Dr. MANNING. That would protect the producers of magnesite, for

example. If it were agreed to, that would enable them to compete with foreign magnesite on account of the local price?

Mr. DAY. Yes, sir. I think it is very well understood that the producers of arsenic or antimony and magnesite, and, of course, of manganese and pyrite and other considerable-tonnage metals, can never compete on even terms with the foreign product. We must have some measure of protection or bounty, or, I might say, help.

The CHAIRMAN. You would not have this bounty go into effect immediately, so that the Government would be compelled to pay it on all these ores, unless in the discretion or in the opinion of the administrator of the bill. it was necessary or advisable to do so, would you?

Mr. DAY. I do not see any escape from it. A man is not going to develop a considerable operation which involves, we will say, anywhere from $10,000 to $1,000,000, unless he has some assurance that he will get a satisfactory price for his product. If the Government offers him a bonus, that is not the full price; that will be only a fraction of the price. He must depend upon the regular market, then, for the difference, and it seems to me he is taking sufficient risk if he takes the market risk. The Government, from my point of view, is entirely justified in offering this bonus for all that can be produced. The protection of the Government is that it draws its own bill; it dictates the terms on which the bounty shall be paid.

The CHAIRMAN. In other words, the producer would have the market to depend upon, and if he would supply to the trades a certain amount of these metals, he would then receive from the Government a bounty?

Mr. DAY. Exactly, Senator.

The CHAIRMAN. In other words, the Government makes him a present of that; it gives it to him for his energy in developing his properties and producing his metals?

Mr. DAY. Yes; I am aware that that word at the present time might be objectionable, but it virtually amounts to that. You may call it a subsidy, if you will; but that is also a word that was once tabooed. But I notice that the foreign governments are not so fearful of using those terms, which appear to be advisable. They subsidized shipping and subsidized transportation and mails and great industries without question. This is really a subsidy on a small scale to attain the things sought for under the bill, to stimulate production.

The CHAIRMAN. Your opinion is that such a course would tend to encourage the production of these metals quicker than any other way?

Mr. DAY. Quicker and cheaper, and simpler in every way, and not alone to furnish the present emergency, but to stimulate the production to such an extent, and development to such an extent, that we would be reasonably safe in the future from any such situation such as we are finding ourselves in now.

I want to refer again to the proposition that personally I do not consider—and I believe the testimony will bear it out—that the emergency is so great as has been stated; in other words, with the possible exception of manganese, that we can not get hurt very much. Even were the Shipping Board to take every ship in 30 days, we would still get along without serious distress, with the exception,

possibly, of manganese. There is no question that as long as these great consumers of these imported ores and metals can get them, they are not going to admit that they can substitute or get along without them. Just as soon as they know definitely that they can not get them, then they will go out actively to develop material for themselves.

The CHAIRMAN. Is there any question you desire to ask Mr. Day, Dr. Manning?

Mr. WHITE. There is one point that I would like to ask about. The question of bounty has one factor under it, of course. In the case of manganese ore, the normal price here is four times what it was normally?

Mr. DAY. Yes, sir.

Mr. WHITE. Here is a mine in the West, we will say, located in such place that it has a $5 truck haul and a $10 railway haul to the market, making a total transportation cost of $15, which is more than the normal price of manganese ore.

Mr. DAY. Yes; of imported manganese.

Mr. WHITE. Of imported manganese ore. Now, under the bounty system, suppose you put the bounty at $15 a ton on manganese ore. The man who had his capital invested in that product could not be assured, if normal conditions came back, of more than $15 a ton for his ore, or just the price of hauling it to the market. In other words, the bounty system is just so much certain or sure that he is going to get. The rest of the price he does not know where he is going to get.

Mr. DAY. No.

Mr. WHITE. But this man would be entirely out of the market under normal conditions because the bounty of $15 would just cover the cost of transportation and the operation of that business. He would have no guarantee of a return of his investment or of what that return would be in six months——

Mr. DAY. That seems to be true, but at the same time we can only strike an average to meet those conditions.

Mr. WHITE. We have, for instance, in the West—I believe the estimate to be fairly conservative—the possibility of several hundred thousand tons of manganese ore, most of which would be produced under the example which I just gave—that is, at least 50 per cent of the manganese which we expect to get from the West will be produced under that illustration.

Now, in case of getting the manganese ore, as I see it, a bonus system, unless the bonus was very high, would not give any man any guaranty of getting his capital back, because of the fact that there is no definite guaranty of the price at which he is going to sell the material at, and unless the bonus is big enough to cover the cost of the production and the haul to the market he would have no assurance to guarantee his product and compete with the price. Now, how can he get his price back under the bonus system? I can not exactly figure it out.

Mr. DAY. Let us apply that to the other plan proposed of buying outright a fixed tonnage at a fixed price. The weak point of the price-fixing proposition is the uncertainty as to the duration of the war.

Mr. WHITE. The uncertainty of a definite net return.

Mr. DAY. As long as the war lasts we will have no ships to bring in foreign material, so that the market is shut off. That is a fair deduction.

Mr. WHITE. The chief problem is how long the war is going to last.

Mr. DAY. Yes; you suggested if the war should come to an end in six months it might be awkward for those men who attempted to develop manganese; I agree with you. But suppose the Government has made a contract to bring out some manganese from some man and the war ends in six months and you can bring in foreign ores at the old normal price of 1914 and 1915—you lose all the excess that the Government has contracted to pay for it.

Dr. MANNING. This bill does not provide for that.

Mr. DAY. Then how are you going to get rid of the ore if you have contracted for it?

Dr. MANNING. The Government would have it and protect its own interests, according to a provision put in the bill.

Mr. DAY. I do not know it seems to me a very complicated method of attempting to handle it.

Mr. WHITE. As I understand it, under the proposed contract system, as the bill now stands, a contract could be entered into for a certain amount of ore at a certain definite price, and, under your condition, if the war should end in 60 days, undoubtedly the Government would have to purchase that ore at that price. It can protect itself against imported ore under a provision in the bill. If the Government wants to exercise its protection as a business measure, the Government is able to protect itself against what would be a bad purchase under those conditions. But, as I understand, the Government would still enter into a contract for material at a certain price.

Mr. DAY. Yes; I do not understand that the bill confers the power directly or indirectly upon the administrative officials of the Government to establish a tariff regulation.

Mr. WHITE. It does up to the difference between the cost of the imported material and the price paid for the domestic material during the length of the Government's obligation.

Mr. DAY. I understand that it is true that the President, and through him other administrative officials of the Government—the proper ones—have now the power of embargo to prohibit the importation of any material thought objectionable.

Mr. WHITE. But that power might terminate with the termination of the war. If you are going to entail an obligation for two years, to protect that particular obligation a War Trade Board embargo might be entirely suspended. We do not know how long a life the embargo would have. That is the uncertain factor that has not been decided.

Mr. DAY. If it is thought wise to go to that length, it seems to me the proper thing to do would be to pass a tariff bill at once.

Mr. MACBETH. Mr. Chairman, I would like to ask Mr. Day to give his opinion of the licensing provision of this bill. As a man who has developed large properties, I would like to ask him whether he would undertake to develop any property under this licensing feature?

Mr. DAY. If I were a prospector, as I was not so long ago, I can not conceive of any condition under which I would care to take

out a license to prospect and to develop minerals. I understand from that that the revocation of the license, which would lie at the pleasure of an official 3,000 miles away would put the operator or prospector entirely at his mercy or at his judgment. We will assume, of course, that his intention is good, but it becomes a matter of judgment as to whether a man should either secure a license or continue to hold one. It seems to me so entirely un-American, so revolutionary, and so opposed to the spirit of the mining industry, that it would be a total failure. That applies particularly to the prospecting and development. The licensing feature might be made to work with those doing a brokerage business, or a warehouse business of some sort, but I really can not conceive of it as being practicable to the mining business.

Mr. BASTIN. The suggestion of the bonus system has some attractiveness, in that it might avoid a very large governmental executive staff, which would be necessary under these other provisions; but would it not involve a very large and very certain outlay of funds? The funds would all be going out and none coming back, as would be the case under the revolving fund plan. For example, if you take the case of our high-grade manganese requirements, and estimate them at 500,000 tons in 1918 above our present production—Mr. Hurt suggested that a $30 to $40 advance in price would be needed per ton to stimulate domestic production—that would mean an outlay of $15,000,000 to $20,000,000 for this manganese alone, not to mention the same bonus on the 200,000 tons or more of present production. Does it not seem that the sums involved in these proposed bonuses are extremely large?

Mr. DAY. They are very considerable sums, no doubt, but as business is being done nowadays, I consider them relatively small as compared with the magnitude of the business involved.

Let me say in explanation of this bounty, or premium or bonus plan, that it is not original with me, but I saw it worked out, as you all have; it is a matter of public information very recently.

A few years ago the Canadian Government saw fit to fix a bounty, and that is what they call it, on the production of lead in Canada, and particularly in the Province of British Columbia. It established a bounty, I believe, of $15 a ton on lead—I do not remember whether it was a short or long ton, but that is immaterial—up to the point where the price of lead reached 18 pounds sterling, when the bounty automatically ceased. That resulted in the production of a considerable tonnage of lead in British Columbia and the Canadian country and it worked perfectly. It attained the object sought for which was to stimulate production of lead in Canada, and the Government paid a bounty outright and only requested proof that the lead had been produced.

Mr. BASTIN. What objection would there be under the bonus plan to leaving the determination of the bonus to the Government administrator? Might not, for example, a small bonus be as effective in drawing out production in one State as a larger bonus would be in another State?

Mr. DAY. I can conceive of such a situation, but it seems to me that whenever you go into detail, whenever you go into the situation of each individual man or producer or company, you engage in interminable complications.

Mr. BASTIN. In the case of the Canadian bonus, the time came when it was no longer necessary to pay that bonus. Should not the Government have the power to determine on what articles and just when it was necessary to place a bonus?

Mr. DAY. I think it should, and they did have that power when they considered their bill, that the limitation should be as respects time. Time is of the essence of the arrangement. The suggestion of three to five years is simply my opinion—a better opinion might suggest a longer or even a shorter term, although I think preferably a longer term would be advisable.

Mr. BASTIN. Do you not think there might be danger of mistakes and mal-adjustments if an attempt was made to fix all of those bonuses in advance by legislation?

Mr. DAY. Unquestionably we would not get a perfect measure. I simply compared the general scope of the thing to our practice in the construction of ships—in our shipbuilding program. We have not considered relative cost; we have not considered anything but the object sought to be attained, and we have gone ahead on that basis, and I think the country approves generally the plan, although possibly it criticises the details. In a measure of this kind there are bound to be inequalities. It would not be a perfect proposition but I believe, of the different plans suggested, there is still another that we have in mind which is applicable and which has been utilized by the Government in another branch, and that is the establishment of a large corporation on the line of the war-finance corporation.

Dr. MANNING. Under this bill, Mr. Chairman, I understand that it is possible to do just as they did on the Lever bill with respect to the buying and selling agency.

Mr. BASTIN. You have expressed yourself as being opposed to the hoarding provision in the bill?

Mr. DAY. I think it is really unnecessary.

Mr. BASTIN. But suppose there is an insufficient supply of high-grade ore, of foreign or domestic origin—of manganese ore, we will say—is there at present any adequate legal provision to prevent, we will say, a large steel company from stocking up on large supplies of this material?

Mr. DAY. Well, that raises a commercial question. In whose judgment are you going to decide what is too large a supply? Is it going to be in the judgment of the man responsible for pay rolls and bills of the concern and the financial success in the fulfillment of its contracts, or is it going to be in the judgment of some gentleman who has been appointed to administer this bill who may possibly have had no commercial experience, and who has had no responsibility, either financially or otherwise, for the success of the operation, and who, using his best judgment, decides that a certain stock or a certain quantity of ore or flux material is excessive? It seems to me that raises a very large question. I know I should object very strenuously to anybody coming into my plant and telling me what quantities of certain materials I required. I would consider that my judgment was better than anybody else as to that particular plant.

Mr. WHITE. Is that not simply a question of whether some other concern is short on the supply, and will have to get another supply from some other concern? Is that not a logical consideration?

Mr. DAY. And that again raises the question of the personal equation. Some plants are better managed than others. One man will take an equal amount of capital and under equally favorable conditions fail where another man will take a much harder situation and win out. In the exercise of his judgment, his ability, energy, enterprise, and farsightedness, he will be successful. Now, how are you going to distinguish between those gentlemen? It seems to me that with the power that the Government now has, and exercises every day, to commandeer any material needed for the successful prosecution of the war, it can prevent any objectionable hoarding or monopolizing of any metal or material whatever.

Mr. MUDD. I think the hoarding provision has another application, namely, the accumulation of supplies by German agents in anticipation of the end of the war, and for the purpose of prompt shipment to Germany to replenish their exhausted stocks. Tungsten might furnish an example. We have no evidence, but we have frequently heard rumors to that effect. Now, you might argue that the Alien Property Custodian could seize upon those stocks, but that throws the burden upon the Government to prove German ownership. Under this bill it would only be necessary to prove that the accumulation of stock was beyond the immediate requirements of the particular group owning or controlling the supply.

Mr. DAY. The situation you describe is rather remote, but my judgment is that as respects the hoarding provision that the remedy is worse than the disease.

The CHAIRMAN. Did you notice in this morning's paper that they had discovered that some German agents had a great deal of cotton, and that the Government was going to take that over through the Alien Property Custodian?

Mr. DAY. Yes; I did.

The CHAIRMAN. Might not the same condition arise with reference to some of these metals and ores?

Mr. DAY. Then I apprehend that the same action would be taken. You have an agency already created, amply competent to meet that situation. I may say that in my experience I never knew of any hoarding in the metal business. Now let me specify; there is an exception to that, as there is to all rules. We will take the case of platinum, for instance. I understand there has been some attempt, perhaps not to hoard it, but buy up platinum for manufacturing purposes, and the Government has proceeded to commandeer all the platinum in the country, acting instantly and without any further legislation, as was proper, having ample authority to do so, to commandeer the supply of platinum. But with that exception, nobody hoards lead or copper or zinc or aluminum. The only people that I know of doing any hoarding is the British Government hoarding tin just now which belongs to American citizens.

The CHAIRMAN. With regard to the idea as suggested by you with respect to the bounty system, do you think that $10,000,000 would be an ample amount, as provided for in this bill, to take care of the situation?

Mr. DAY. I would not pass an opinion upon that. I do not believe it would; that is, over a term of years.

The CHAIRMAN. It would be far below what the Government would need for that purpose, would it not?

Mr. DAY. Yes, sir; I would not limit it; I would not set any appropriation. I am sure it could not be fixed. I will modify that and say that it could be fixed; a lump sum might be fixed not to exceed a certain amount to be paid out in any one year.

Mr. MUDD. What are the advantages of paying a bonus on imported ores and metals?

Mr. DAY. In making that suggestion, I have reference particularly, perhaps, to tin and platinum. The advantages are simply on the theory of war necessity or commercial stringency. We are bound to have a certain quantity of these metals, neither or none of which is produced in North America to any appreciable extent. They must be imported from the East Indies and South America.

Mr. MUDD. To whom would you pay the bounty, the importer or the producer?

Mr. DAY. Anyone who delivered the tin or platinum. The revenue officers within the United States could secure proof of it.

Mr. MUDD. Would you do that regardless of the fact that the imports of these metals and minerals are now subject to license and practically under the control of the Government?

Mr. DAY. Yes: but that does not produce the metal, as I understand it. Other countries are going in and paying any price necessary. It is only public information, but I believe it is correct, that Germany, for instance, is scouring Russia for platinum and tin, and Great Britain has monopolized most of that, and the distribution of it is controlled absolutely and very arbitrarily by the British Government.

Mr. MUDD. Do you think the British Government would permit this country to pay bonuses on tin produced in the Straits, for example?

Mr. DAY. Personally, I do not believe it would; but I believe that sufficient pressure could be brought to bear by the United States through the State Department to secure ample supplies of tin at a reasonable price. In other words, it seems to me that reciprocity comes largely into play in the question of tin. We are ladling out immense sums of money and credit and everything else to help our allies, and it seems to me it is only fair that they should reciprocate in a small thing like tin.

Mr. MUDD. On the question of tin, our purpose is to take steps to decrease its consumption or to restrict its consumption to the essential uses in order to accommodate the shipping program. It is not, primarily, a question of stimulating foreign production, although that would be desirable.

Mr. DAY. It seems to me that the stimulation of production is far more desirable than restriction of consumption, but stimulation of tin is without our control; the material is produced in foreign countries. We have only one way to stimulate, and that is to offer a price which would cause it to flow to this country, and that would be by offering a bounty of some sort. I do not pretend to be an expert in tin. The information I am giving you is general information, which is known in the metal trades. There are people in this country who understand the situation thoroughly who are engaged now in importing tin ore and in smelting tin ore in New York Harbor—the America Smelting & Refining Co. and the National Lead Co., the

largest concerns of their kind in the world. They could give you the details with respect to tin which I presume you have in mind. It is simply general information that is common to everybody in the trade.

But, speaking of the shiping end of it, it occurs to me—and I have been so informed by practical shipping people—that a certain tonnage is bound to be kept in the trades between the nations, and especially between the United States and India, where, for instance, graphite is imported from India, antimony from China, and large quantities of jute are imported from India, and we are bound to bring in coffee and rubber and tea, and things of that sort, which are absolutely necessary to our commercial existence, and insuring some shipping in that trade. Now, with that shipping bound to come in, a certain amount of tin, manganese ore, and other, you might say heavy, tonnage. They do not load a ship with only one commodity in that trade, like they do iron ore on the Great Lakes. They put in a portion of the cargo of heavy material down low in the hold, down as low on the keel as they can get it. For instance, we find that copper and lead bullion is very attractive to shipping people for a certain limited amount of their space. It practically take no space——

Senator POINDEXTER. It is a sort of ballast?

Mr. DAY. A ballast; yes.

Senator POINDEXTER. You spoke of the British Government hoarding tin that is owned by American citizens. Where is that?

Mr. DAY. In my evidence yesterday, Senator, that grew out of the testimony of a gentleman, I think by the name of Gay. I do not know who he represented, but he spoke about the feeling in this country on the part of many people of distrust of Great Britain's commercial policy both during and after the war. He was speaking, I think, to the question of withdrawing tonnage, and I received permission from the chairman to ask him a question—if the Shipping Board, in allocating tonnage, was aware, or had taken into calculation, the fact that Great Britain some short time ago had put an embargo on tin which belonged to American citizens and refused to deliver all that tin.

Senator POINDEXTER. Where is that tin?

Mr. DAY. My information is it was in England.

Senator POINDEXTER. Is it mined there?

Mr. DAY. No, sir; it is mined in the East Indies and brought to England in the course of trade and held there under embargoes.

Senator POINDEXTER. To what extent is platinum used in the industries of this country?

Mr. DAY. It is very widely used in certain manufacturing industries.

Senator POINDEXTER. What industries?

Mr. DAY. Well, they use more or less platinum, for instance, in the manufacture of magnetos and various electrical apparatuses.

Dr. MANNING. The War Department and Navy Department use it very largely for different plants that they are putting up in this country. The War Industries Board has commandeered practically 75 per cent of the platinum held by the jewelers of the country.

Senator POINDEXTER. Is it used in hardening steel, or anything of that kind?

Dr. MANNING. No.

Mr. MUDD. It is principally used as a catalytic agent in the manufacture of sulphuric acid and in the conversion of ammonia to nitric acid. Other uses are jewelry, dental purposes, platinum dishes, etc., and in electrical devices.

Mr. DAY. Mr. Chairman, in conclusion I simply want to make a plea for the consideration by this committee and generally by the Government and the administration of a more sympathetic attitude and practice toward the mineral industry. It has been my experience, and I find it is general among the business people of the country, that they dread to have any commercial relations with the Government of the United States. It seems to me that is a very unfortunate situation. A business man, a taxpayer, feels he does not get a fair deal in his business relations with his country. In this connection I have been informed that the engineer who escaped from Siberia with a large quantity of platinum, the largest single stock of platinum in the United States, has had great difficulty in getting a fair price for his product; and that attitude has run all through the relations of the Government with the producers of metals, and particularly since the entrance of our country into the war, and has existed really from time immemorial. It seems to me that it should not be.

Mr. MACBETH. I would like to ask Mr. Day about that provision of the bill which will permit the administration to take over plants, smelters, and mills, if he would care, as a business man and as a practical mining man to take any chance in developing the property?

Mr. DAY. I can only say in answer to that I feel that provision of the bill is inclined and tends to dishearten and discourage the prospector and miner and operator rather than encourage him, and not to stimulate the production of his particular metal or mineral. I would hesitate—in fact, I would decline—to initiate any new operations under any such provision. It seems to me that it is putting arbitrary power into the hands of the Government; it is going entirely too far. I can not conceive of any situation requiring that. I want to ask the gentlemen (if it is a fair and proper procedure) of the Bureau of Mines and the Geological Survey if they know of anybody who is hoarding, or have ever known of anybody hoarding any metal or mineral, so called—I will except platinum, of course, which you might say is a precious metal like silver or gold, worth a great deal of money? I have never known any hoarding. We are all anxious to sell our product and get the money for it. A man who attempts to hoard or corner any of these supplies goes broke very quickly.

Mr. MUDD. There is one example which might be stated—I do not know whether you call it hoarding exactly, but it was accumulation of stocks, and it took the Government many months to bring out the facts regarding stocks of chrome ore in this country. We had been working on chrome ore and nobody had any conception that they were as large as they proved to be. We have heard a good many rumors, which sometimes proved to be perfectly false, indicating that German agents were attempting to accumulate stocks for shipment to Germany at the end of the war. I want to emphasize the fact that these had been rumors only, but it does not seem to me that it is a remote contingency; it seems to me it is a natural thing

for Germany to attempt to do, not only in the markets of the United States, but throughout the world. Their stocks of rare metals have declined until they are practically exhausted. I think the cargo list of the submarine *Deutschland* is very significant. The *Deutschland* carried some rubber; also nickel, and practically the balance of its cargo was high-grade ferroalloys or concentrates used in the manufacture of ferroalloys. This indicates their dire necessity and shortage of those particular products. I think that it is very plausible to expect that they would attempt to accumulate stocks of that kind in anticipation of the end of the war.

Mr. BASTIN. Suppose there were no hoarding at the present time, is it not very probable that as restrictions imposed by the exigencies of war become greater and greater and it becomes more difficult to get supplies that hoarding might be resorted to unless there was a penalty against it? I do not imagine that present conditions are going to persist, but if the war continues the conditions are likely to become more and more acute.

Mr. DAY. Well, that harks back to the original difference between us—in whose judgment is this going to be decided? There are no two plants alike, and no two conditions alike, and no two processes of manufacture alike, even in the same trade. I do not see how you are going to get at it. The minute you interfere with those things you render the matter worse, unquestionably. I do not feel competent to go into my neighbor's plant, who is refining or smelting lead, and tell him anything about his process. I believe he is more competent to judge. His conditions vary from mine a little bit, and they always have.

Now, let us take the matter which arose a little while ago and which worked itself out—the question of supply of coke. As you know, the supply of coke was quite short for a while and the manufacturers were hard put to get their ordinary quota, and the price went up to a very high figure. We paid as high as $22 a ton for coke which before the war I could have gotten at $7.50. The result was that all the manufacturers and purchasing agents scoured the United States and Canada for coke and we were bothered to get along for a while, but we got along and got the coke and stimulated a big production, so that now there is plenty of coke.

Much the same thing happened with respect to the dye industry. We were cut off practically overnight from German dyes, and a great cry went up that we were not going to have any more cloths. The other day in New York the American manufacturers were showing, I think, 57 different kinds of dyes, possibly in contrast with the German dyes, with the assurance that they were as good or better than the original imported ones.

Now that is an illustration, I think, in two widely separated products like coke and dyes where American enterprise and brains can and will win out whenever there is a proper degree of encouragement received.

Mr. MACBETH. What about zinc when Belgium was overrun and the capacity was shut off?

Mr. DAY. When the war broke out and the production of spelter by the European smelters was cut off the price of zinc went up to a very high point. We had enormous ore supplies in this country,

but lacked the works. As soon as the zinc smelter people were able to supply the necessary reduction capacity and reduce the American zinc to spelter the prices went down until now zinc is really a drug on the market. A number of small producers are going out of business or going broke.

Mr. MUDD. There is another example, Mr. Chairman, which indicates a tendency in some quarters to accumulate large stocks; one sulphuric acid manufacturer was reported two months ago as having stocks of pyrite on hand which would supply his plant for one year. Those stocks were probably accumulated before the shortage of pyrite was evident. It was simply the exercise of foresight at that time, but if that process was repeated at this time we would have to attribute it to some other motive than foresight, because the shortage of the raw material for sulphuric acid is so well known that no manufacturer should be allowed to accumulate beyond a sufficient stock to carry him for more than three or four months. The acid manufacturers themselves say that they ought to have three or four months' supply, but none of them have gone to the extreme and claimed that they need a year's supply.

Mr. DAY. Well, I would not care to pass upon a question like that without hearing the other man. He may have some very reasonable argument to present. Let me respond to that by saying that the actual condition now exists, and it exists by direction of the Government authorities. If you will pardon me, Mr. Chairman, for referring to the lead trade, it happens that I am well acquainted with the conditions in that trade and can speak by the card. It has been agreed with the War Industries Board and the transportation department that the lead manufacturers shall accumulate stocks at certain strategic points such as New York, Philadelphia, and Baltimore, for example, and the manufacturers are now proceeding to do something they did not practice before. Now, I might speak of pig lead for distribution to the trade, when everywhere the manufacturers are carrying that in order to be able to protect their trade and be in position to comply with the requirements of the Government, and they are doing it without any adequate compensation being taken into account. They are tying up large amounts of money on those stocks. Now, that whole question arises, not from the consumption or production of lead, but from a scarcity of transportation. We are notified by the transportation people that there will not be enough to go around this fall and winter, and in order to keep going in our business we must establish depots while there is transportation available during the summer months. Now, that might be fairly considered as hoarding, if we could not say otherwise, and the judgment of men responsible for the life of the concern is bound to be, and always will be, better than anybody else's, because they have everything at stake.

The CHAIRMAN. That is not a hoarding matter; it is just a matter of course and preparing for next winter.

Mr. DAY. I could not call it hoarding. The only things in the trade which I recall to which objection could have been made was one which occurred many years ago when the Guggenheims made contracts with the lead producers of the country to take all of the lead offered at a flat price, I think it was 4 cents a pound. Business

having become stagnant, the consumption of lead fell off, but the men who had these flat contracts kept producing the lead until they loaded the Guggenheims with 100,000 tons of pig lead for which there was no sale. Now, even as stout as those people were financially and as acute as they were, they were in a dangerous situation, and they relieved themselves by coming back to the producers and giving them a bonus or premium of $10 a ton to let the lead stay in the ground.

Senator POINDEXTER. When was that?

Mr. DAY. I think about 15 years ago.

Senator POINDEXTER. With regard to this matter of laying up stocks, you remember that last summer the Fuel Administration advised and almost compelled people not to lay up any supply of coal. They advertised all over the country that there would be plenty of coal when they needed it, and they should not get their winter supply during the summer. Now this summer they are advertising just the opposite. They have posters out urging the people to do the thing that last summer they urged them not to do. So it may be a reason for laying up supplies of commodities. I think, myself, that in that connection the same principle is involved as you are speaking of, that the coal famine last winter and tie-up of industries was due more to that order or advice of the Fuel Administration last summer to people not to lay up a winter supply of coal than to any other one thing.

Mr. DAY. We suffered considerably in the West, not from a lack of coal but from a lack of coke. Now, we have gone to work and accumulated a supply of coke and made contracts whereby we are obligated to take a large amount of coke. We are piling it out to the smelter for winter use, apprehending that when conditions become bad again we will need it; otherwise we could not operate. We might fairly be accused of hoarding that, if some neighbor who was not very well fixed should see fit to take it away from us.

I think the hoarding feature is practically negligible. It would not do any good and it would not do any harm, but I consider it unnecessary.

Mr. MUDD. If the price is high enough, nobody will hoard it.

Mr. DAY. In the metal industry everyone tries to market his product as fast as he can. If he holds it to speculate on, it means risk, and there is very little speculation in the metal trade now, practically none by the producers.

Mr. WHITE. The situation seems to me, from the statement of the chairman, to be a little bit different. Suppose, Mr. Day, there was a man who did not have any coke and another manufacturer in the same business had a nine months' supply, how would the judgment of the two business men work out that situation? That is a problem which this bill contemplates and faces—where there is a consumer of metal who did not have an adequate supply and somebody else had an excessive supply, how would you get an equitable adjustment of that?

Mr. DAY. Well, to come back to the first principle of the proposition, suppose one man has an excess of brains and another fellow has a lack of brains; how are you going to distribute them?

Mr. WHITE. Supposing the country must have the product of both of these plants to get its lead supply. Take the case of two smelters.

Should we operate both of them, in order not to cut off our supply of lead for military purposes?

Mr. DAY. No; I would hesitate to say what I would do in a hypothetical case. I would have to be governed by conditions. But if one man was situated so that he could reduce the metal, and the other was not, I would ship the metal to a place where he was in a better condition to handle it. That would depend entirely upon conditions. But it seems to me in speaking about splitting up supplies—for instance, what we call fluxes—those things are matters of commercial enterprise and ability. One manager goes to a purchasing agent, and as a result of his energetic mind keeps moving and locates a source of supply and makes his contracts and gets the delivery and gets the material in. That man should not be penalized for his enterprise and energy. Now, whenever you start to hold him up and assay him, and particularly by a jury that are not his peers on the subject, it seems to me that we are not alone doing that man a grave injustice, but are absolutely going to defeat the object sought to be attained; in other words, you strangle the industry, the plant and the property, and put it out of business.

Senator POINDEXTER. What is the condition of the mining industry in the Pacific Northwestern States to-day as to production?

Mr. DAY. Production is fairly good under the conditions. We are short of labor, particularly of skilled labor—very short. The properties are nearly all running short handed. A portion of that shortage is caused by an epidemic of influenza and pneumonia which is very prevalent throughout the mining camps of the West. Much of the shortage is caused by the departure of men for shipbuilding yards and other lines of business where they offer attractions to them in the shape of change of location, in the big cities, where they pay high wages, and the natural tendency for help in the mining business is to rove. But apart from those conditions, a fairly good tonnage is coming out. It is not increasing; it is shrinking, but it is sufficient for military purposes of the country at the present time.

Mr. MUDD. May I say a word about magnesite in Washington, which is, I believe, the State of Senator Poindexter. The latest advices which we have indicate that two of the plants which Mr. Day mentioned have shut down recently. We all recognize that there are large deposits of magnesite in Washington, but the business in Washington and California to-day is in a very unhealthy condition. The production, instead of 1,000 tons a day—which I believe was introduced in the evidence some days ago—is reported for the first quarter of 1918 at 22,000 tons, or at the rate of something less than 250 tons a day of crude magnesite. It requires 2 tons of crude magnesite to make 1 ton of calcined magnesite, the output of which, for the first quarter, was only 107 tons per day of calcined magnesite. The business in California is in just as bad a condition.

Senator POINDEXTER. How does that correspond with the demand for magnesite?

Mr. MUDD. I think perhaps it may be explained as a case of overstimulation. The demand has fallen off. The refractory companies are supposed to be well stocked, but the output has been greatly restricted on account of freight embargoes.

Senator POINDEXTER. In view of those conditions, is there a demand for any Government intervention in the matter of magnesite?

Mr. DAY. The part that the Government should play in the magnesite industry would put it on an established basis which would permit it to compete with the Austrian magnesite at the end of the war. There is ample supply, and we want to establish, if possible, permanent industries on the Pacific coast. If the industry suffers during the war, if the plants which are erected at this time are not successful, it will be much more difficult to meet foreign competition at a later time.

Senator POINDEXTER. If the production of magnesite is equal to the demand, what would the Government do to aid the industry?

Mr. DAY. I think the Government in that case would try to reconcile the price asked by the producers and the price asked by the consumers. I think the industry has suffered for that reason. Producers have been inclined to take advantage of the shortage and prices have gone way up. The present necessity is to reduce the price and thereby increase the demand; that is what they are aiming at to-day. The price has been testified here as rising as high as $85 for calcined magnesite. Now, the producers, in an effort to find a market, have reduced the price to $50 or $60. If they are successful, the market demand will be revived.

Mr. BASTIN. One point in connection with magnesite—possibly a minor point—is that for refractory purposes it is a substitute for chromite, of which there is a distinct shortage. The Government might do much in encouraging that sort of substitution.

Mr. MUDD. And it points out another thing, that the Government at this time should not permit the waste of capital and labor in putting up new plants in excess of the actual demands for material. There has been a lot of money spent that we may have difficulty in recovering, as illustrated by the fact that two magnesite plants have already shut down.

Mr. MACBETH. Do you know that there are two new mills started recently by the Northwest people?

Mr. DAY. But the Northwest people are not the only people who are staying in that business on a large scale.

Mr. MACBETH. Do you know that the Northwestern Co. is controlled by parties in San Francisco?

Mr. DAY. I do not know about that.

Mr. MACBETH. And they can go ahead without any Government interference.

Mr. DAY. But the Valley Magnesite Co. and one of the others that has been mentioned are not closed down?

Mr. WHITE. It seems to me there is one other element in the magnesite situation. Those companies have been in operation and are not in a very favorable condition at the present time. If the war should close very speedily those companies might or might not continue to operate. The whole problem in this production of new minerals is that somebody has to put money into these properties. They have developed the properties to meet the needs which have to be met. We had to have magnesite and somebody had to produce magnesite in this country. Now, those people having gone in and made an investment, it is very uncertain whether they can continue to operate when the war closes, apparently due to the fact of the demand being near the seaboard and also due to the fact that consumers have used

the foreign material and as soon as the war stops they will go back to the foreign material. It is very precarious as to whether the domestic material will have a market or not. It may not have, but it could not be produced as cheaply. But if there is one small element of choice the consumers will go back to the foreign market. Magnesite is a little further advanced than the others. You do not have to encourage people to put the money into it. But it illustrates a very uncertain condition, and it is a thing which is hindering these other industries because people who want to put money into it are afraid that if the war should close the consumers would go back immediately.

I think that magnesite is a very uncertain element as to how long a market they are going to have. It is one of those things as to which we feel that every constructive step should be taken to put it on a permanent basis at the present time.

There has been a period, possibly, of too high prices, which has reacted in a way, but some of the steel people have developed a substitute for it, which would never have happened if a temporary high price was placed upon other materials, and they may have aided their own industry by that temporary action.

But the main point, as I see it, in the case of magnesite, is that something may be done to help it out as a permanent industry, or some other thing is coming up where the people have to put money, and magnesite may serve as one illustration where people have gone into a business and met with disastrous results, or would meet with disastrous results if the war should end quickly. Of course, if it goes on for a couple of years it will be all right.

Mr. DAY. Mr. Chairman, some reference has been made to my evidence given before the House Committee. I would like to request that in consideration of this, and in the light of this hearing, that my entire testimony there be taken into consideration. There was a little difference in our relations at that time. I was appearing particularly on two counts, one to correct an impression that the western mining industry indorsed the Foster bill, and with particular reference to the meeting of the mining people, held at Denver, I think it was, in January of this year, to protest against the scope of the bill, and to set out what they considered would be proper measures, of which the bonus or bounty feature to which I have referred was one.

The other was that apprehension had existed in the copper, lead, and zinc industry, and an attempt was to be made, or was being made, to establish what was popularly known as a mineral dictatorship which would contemplate seizing or commandeering these great industries, and I appeared there to protest against what I understood to be that program: I learned, and was assured by the committee, that they had exempted copper, lead, and zinc from the scope of the bill, and I was assured by the chairman, Mr. Foster, that they have no intention of including those items in the bill.

Now, as to the questions asked me in regard to licensing and hoarding, I had in mind their application toward copper, lead, and zinc. With the exclusion of those items I was not at that time concerned. My position now is a general one as a mining man and a taxpayer.

Mr. BASTIN. Do you consider that the exemption of those major metals is made sufficiently clear in the present draft of the bill?

Mr. DAY. Personally I do. I have been so assured by the gentlemen of the House that they have no intention, as Mr. Foster said, of sandbagging the industry.

The CHAIRMAN. Have you anything further to state, Mr. Day?

Mr. DAY. I have nothing further to say, Mr. Chairman, and I thank the committee for its courtesy.

(The chairman granted permission to Mr. Day to insert copy of letter from United States Tariff Commission, dated May 4, 1918, calling convention at San Francisco, June 24, 1918, on antimony, quicksilver, and tungsten ores and products, as follows:)

UNITED STATES TARIFF COMMISSION,
*Washington, May 4, 1918.*

GENTLEMEN: The United States Tariff Commission is planning to hold a conference at San Francisco on or about June 24, on antimony, quicksilver, and tungsten ores and products, at which the miners, smelters, and consumers of these metals will be brought together. We desire particularly that you should have a representative at this conference who will be prepared to present your views on aspects of the industry mentioned below.

The commission is preparing a report on the antimony industry, a portion of which is herewith submitted for your criticism. May we ask you to examine it and give us the benefit of any suggestions which may occur to you for its improvement? Do not hesitate to revise the statement in any way you think advisable. We desire all possible information in regard to disturbances and rearrangements in American industries caused by the war. The data collected will be at the disposal of Congress and will be serviceable at the close of the war when the business of the country shall be reorganized on a peace basis and new conditions of foreign competition have to be faced.

We wish to have the views of producers, importers, and consumers on the following points:

1. Present conditions in the industry, extent of war disturbance, new plants, etc.
2. What the postwar conditions are likely to be as to foreign competition, and what preparations are being made for readjustment to these conditions.
3. Operation of present tariff schedule.
4. New processes at home and abroad, which may affect the economic or competitive position of the American producer, manufacturer, and consumer.
5. Minimum price for antimony metal, at which American mining operations can show a reasonable profit.
6. For the chief antimony producing country of the world—China—the cost of smelting per ton of regulus are shown in some detail on pages 12 and 13. Comparable American figures are requested. It is desired also that cost figures be presented on mining and concentration, as well as smelting and refining, both at home and abroad.
7. What increase in cost of materials and wages has occurred in the industry since 1914?
8. Relative foreign and domestic costs of production of antimony products.

Will you kindly supply what information you can contribute on the questions enumerated above? Such of the information as you prefer to submit for the confidential use of the commission may be prepared and sent in in writing, and, needless to say, all points which you desire classified as confidential will be strictly so treated.

I trust that you will advise us shortly of your intention to be present at the San Francisco conference, on June 24.

Very truly, yours,

F. W. TAUSSIG, *Chairman.*

PENNSYLVANIA SMELTING CO.,
*Pittsburgh, Pa.*

The CHAIRMAN. The committee will now adjourn until to-morrow morning at 10 o'clock.

(Accordingly, at 12.10 p. m., the committee adjourned until to-morrow, Saturday, May 25, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

**SATURDAY, MAY 25, 1918.**

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington D. C.*

The committee met at 10 o'clock a. m., Senator Charles B. Henderson (chairman) presiding.

Present: Senators Poindexter and Sterling.

Also present: Dr. Van. H. Manning, Director of Mines and Mining; Mr. George Otis Smith, Director of the Geological Survey; Mr. Mudd; and Mr. Bastin.

## STATEMENT OF W. A. BONITZ.

The CHAIRMAN. Mr. Bonitz, what company do you represent?

Mr. BONITZ. The Hudson Reduction Co.

The CHAIRMAN. Where is the Hudson Reduction Co. located?

Mr. BONITZ. Latrobe, Pa.

The CHAIRMAN. Who is the president of this corporation?

Mr. BONITZ. It is not a corporation. It is a partnership. There are six of us that control the company.

The CHAIRMAN. What business is the Hudson Reduction Co. engaged in?

Mr. BONITZ. In the reduction of ferrotungsten.

The CHAIRMAN. Before the war, where did your company get its tungsten?

Mr. BONITZ. We entered just about three months after the war began.

The CHAIRMAN. You were not in business?

Mr. BONITZ. I mean the big fight, originally, you know. We have been in it about three years, now.

The CHAIRMAN. That is, the Hudson Reduction Co. did not begin business until about three months after the war began?

Mr. BONITZ. Yes.

The CHAIRMAN. What company were you connected with before the war?

Mr. BONITZ. The American Vanadium Co.

The CHAIRMAN. Did that company deal in tungsten at all?

Mr. BONITZ. No; ferrovanadium only.

The CHAIRMAN. Where has the Hudson Reduction Co. been getting its tungsten from since its organization?

Mr. BONITZ. Colorado, Utah, California; all through the West.

The CHAIRMAN. Has it had any tungsten imported?

Mr. BONITZ. Yes; we bought some from South America.

The CHAIRMAN. Since the organization of the company have you been able to get all of the tungsten in the United States that you needed?

Mr. BONITZ. We have never been short of ore, except due to transportation. About two years ago—a year and a half of two years ago—we had a little trouble, but we always managed to keep the plant going.

The CHAIRMAN. Your trouble, then, was due to rail transportation?

Mr. BONITZ. Due to rail transportation. In fact, we had to express, as a rule.

The CHAIRMAN. Had to express it?

Mr. BONITZ. Have had a great number of full carloads by express.

The CHAIRMAN. Does the Hudson Co. deal directly in the tungsten business, or is it a purchaser for sale to other industries?

Mr. BONITZ. Purchaser of concentrates. We reduce the concentrates and resell in the form of ferrotungsten to various steel companies.

The CHAIRMAN. What is the price of tungsten at this time?

Mr. BONITZ. Ferro or concentrate?

The CHAIRMAN. No; the ore that you purchase from the different producers.

Mr. BONITZ. I should say it just depends. If a man needs money you can get it for $21 or $22, but if he does not, it would be $24, around there—$23.50 or $25.

The CHAIRMAN. What does the ferrotungsten bring after it is reduced?

Mr. BONITZ. Well, the price to-day is not in sympathy with the concentrates about $2.25 to $2.30 per pound content—possibly $2.35 would be an extreme price, but there is very little demand for ferro to-day. They are all stocked up. Very little demand for ferrotungsten now.

Dr. MANNING. I would like to ask Mr. Bonitz to state that price in units of tons. He gave the price of the tungsten at $24 and $25 per ton.

Mr. BONITZ. A unit—I should have stated that per unit.

The CHAIRMAN. It ranges anywhere from $21 to $25 per unit at this time.

Mr. BONITZ. At this time. We bought some ore the other day at $21.60. That has been about three weeks ago.

The CHAIRMAN. What was the price when you first went into the business?

Mr. BONITZ. Well, the price was about $32, and it went up to around $90 per unit. I am speaking of units now.

The CHAIRMAN. Yes; I understand.

Mr. BONITZ. Then it dropped again. We had it offered to us as low as $12.50 or $13. We did not buy it at that. The lowest we bought was $15, and a great deal of that was not delivered, but the average price in the last year, I should imagine, has been about $18 to $20, up until the last few months, but the smaller producer can not live on that. There is no doubt about that.

The CHAIRMAN. Well, relatively speaking, what is the difference between the price that the producer gets for his tungsten ore and the price the industries have to pay for the ferrotungsten?

Mr. BONITZ. Well, you have got to do a little figuring on that. Take it on a basis of $25 ore, and it will take about 60 tons of 1 per cent ore to produce 1 ton of 60 per cent concentrates. Now, I am not a mining man. Dr. Manning could tell you more about that than I can; but I should imagine—you take the average cost of the small mine—and the charge for mining and milling cost would be about $10. It would take 60 tons to produce 1 ton. Would that be about right?

Dr. MANNING. I could not give those figures.

Mr. BONITZ. I am not sure, because I am not a mining man—only from what I have gathered from time to time.

The CHAIRMAN. You have been engaged in this business now for some years?

Mr. BONITZ. I have been engaged in it, off and on, for about 12 years.

The CHAIRMAN. How much ferrotungsten will run to the ton of tungsten ore produced?

Mr. BONITZ. Well, you get 60 per cent concentrates, say 1,200 pounds, and the unit is 20 pounds of tungstic acid, which is only 16 pounds of metal. In other words, you pay for 20 pounds, but you only get 16 pounds of tungsten metal. Say, for instance, you could make an 85 per cent recovery. That would bring it down to about 13½ pounds of metal that you get, that you would pay $25 for, and you have got your reduction cost in addition to that, which varies. In other words, we are paying for 20 pounds and we get approximately 13½ pounds.

The CHAIRMAN. After it is reduced?

Mr. BONITZ. Yes.

The CHAIRMAN. What I wanted to get at was whether or not the price paid the producer was in proportion to the price that the industries pay after the ore has been reduced.

Mr. BONITZ. Why, I think, to-day the reducer is not getting a fair price—not as much as he was getting by any means. Our price—you can figure it out—anyone can figure it out. You can put approximately 40 cents for production charges with your overhead and selling expenses, and it is a fair charge. It is not excessive, and in some cases, it would not cover it, and a $2.50 ferrotungsten and $25 ore is about right; it has about 11 per cent in it for the furnace, and with the risk that we run it is a pretty small percentage of profit.

The CHAIRMAN. Then your profit is not very large after taking out the costs, and so forth, that you have just referred to?

Mr. BONITZ. Not to-day. We made good money two years ago, but to-day it has very little margin in it in comparison with what it was.

The CHAIRMAN. It has been brought out here in the testimony—been testified to that the producers in Colorado could not produce the tungsten under $30. Do you know anything about that situation? While others have testified that they could produce in other States for $25?

Mr. BONITZ. Well, I figure on a $10 mining cost and $25—that would give them about $1,400 a ton; and while the big producer can no doubt make good money, the smaller man can not. In other

words, the logic of this is to encourage the production of minerals, not the man that has the mill that will produce 100 or 150 concentrates a month, but the little fellow that will go out and dig up 15 and 20, and the tonnage in the course of the year would amount to considerable. Now, the big mines have been worked pretty closely during the last two or three years, because there has never been such a demand for tungsten in the history of the world before. There was very little tungsten consumed prior to the last two or three years, in comparison with what it is to-day, and if you want to encourage your small producers, you have got to give them a price that will be of benefit to them. They can not go out on $15 or $20 concentrates and make any money. He has got to have 25 or 30—possibly 30—while the big man will get the benefit of the higher price just the same. It might be well if you could consider giving them a bounty. Keep the price down and let the Government pay a small bounty.

The CHAIRMAN. Are you familiar with the terms of the bill?

Mr. BONITZ. Yes; I read it ober several times.

The CHAIRMAN. What is your opinion, if you have any, relative to the advisability of such a measure being passed?

Mr. BONITZ. I think it is the best thing in the world, if we could get Government regulation, and if the commission has proper authority to use. Of course you can not apply the whole bill to any one alloy, because they are different and distinct propositions entirely. Now, you could not compare, for instance—I know you have ferrosilicon. That could not be compared with ferrotungsten or ferrovanadium or ferrochrome. That is a different proposition. Every one is on its own basis. The committee would have to have absolute power to deal with each alloy.

The CHAIRMAN. In other words, they could not all be dealt with alike?

Mr. BONITZ. No; it is impossible. I have been in the business a good many years—not only tungsten—and I think I the alloy situation pretty thoroughly. I am not a mining man. I don't pretend to know, only what I have picked up from time to time, being in the business not from a mining standpoint, but from the commercial end of it I think I am fairly well posted in it.

The CHAIRMAN. Any questions, Dr. Manning?

Dr. MANNING. No.

The CHAIRMAN. Dr. Smith?

Dr. SMITH. No.

Mr. MACBETH. You are not a mining man?

Mr. BONITZ. No, sir.

Mr. MACBETH. Then, may I ask, sir, how you will be qualified to pass on some of the provisions of this bill that relate to mining and restrictions that would be placed upon mining?

Mr. BONITZ. That is what I am coming to. I qualified my statement by stating that I am not a mining man, and I was only speaking from the commercial standpoint, but as we are large buyers of ore, naturally we are more or less familiar with the situation—we have to be, not from a mining standpoint. I would not state whether the cost of mining is $1 a ton or $20, because I don't know, and when I make a statement of $10 a ton I told the chairman I do not know.

Mr. MACBETH. This bill calls for contracts that may be entered into for two years. How, at this particular time, would it be possible for

you to obtain the machinery, to equip a property, and have your production in a two-year period? You know how difficult it is for you to obtain any machinery now. You know in your own business. How would you get your machinery delivered at your property in the West?

Mr. BONITZ. I think I will answer that question, if I can, in this way: I think there are certain minerals or alloys or ferros that should not be exported from this country for a period of two or three or four or five years after this war terminates, even if it should terminate to-morrow. Now, there are certain concerns, I believe, the minute the war is ended, especially in our line of business, would export to people that we do not care to have material go to under any circumstances, and I think there should be some provision that would help your people in the meantime to get your machinery on.

Mr. MACBETH. There are large ore concerns in the West now who have plenty of mines and a large influence that can not obtain machinery for their requirements. I know of one concern that has waited for a year to get some stuff from the General Electric, and has not gotten that in yet. The magnesite problem—the magnesite of the Northwest—the magnesite company operating in Stevens County, Wash., did not make the production it should have made the first quarter of this year because it could not get—it actually took them six months to get and put in a tramway system. It has been trying to get certain kilns for eight or nine months. Now, you want to start on a new property, open up and develop a new property, install your machinery, and make delivery within two years.

Mr. BONITZ. It is a physical impossibility.

Mr. MACBETH. Well, the bill proposes that. How are you going to do it?

Mr. BONITZ. If you will note, I said I thought the bill—I did not say this bill—the body of this bill is all right. There will naturally be amendments, more or less, before it is passed; at least, I should say that is the usual case.

The CHAIRMAN. You have read over the licensing feature of this bill. What do you say of that proposition?

Mr. BONITZ. I think that is very good. I think it is one of the best features in the bill; and I am a firm believer in the regulation of prices, both as to raw materials or ores and ferroalloys.

Mr. MACBETH. Did you ever attempt to obtain any money for the purpose of mining development?

Mr. BONITZ. Yes; personally once out in New Mexico, much to my sorrow.

Mr. MACBETH. Well, sir, I will state to you, from my experience of many years, that it will be not only impossible for you to obtain one dollar for the opening up and development of any mining property with that licensing proposition existing. You could not get it. Mining men will not put money into property with a provision of that nature.

Mr. BONITZ. What is the idea of that appropriation, an appropriation of $10,000,000? I do not think it is sufficient basis to work on. What is the idea?

Mr. MACBETH. That is the trouble, sir. We are not to get 10 cents of that $10,000,000 for the purpose of mining development or assist-

ance, but to pay for this ore which you contract to deliver to the Government. Now, if we are to get some of that $10,000,000 and the other man was to take a chance, that would be a different thing. There is another provision in the bill that would prevent you from obtaining any money for mining development, and that is the provision that empowers the administrator to take over at any time—requisition or take over for use or operation by the Government—any undeveloped, insufficiently operated, or developed mine; that is, it may be, in the opinion of a man who is not a practical mining man, insufficiently operated, and your plant is taken over to be operated by the Government, and possibly by some man who is not a practical mining man. Now, who is going to put up any capital for mining development under that condition? You would not have the audacity to come to a man and ask him to go into it

Mr. BONITZ. Don't you think, getting down to the world situation to-day, it is very critical? You can not make steel without ferrotungsten, ferrochrome, or other alloys. It is the basis of all steel. The Government is helping the railroads to-day, and if the miners can not help themselves, the Government is bound to come to the assistance of the miners, the same as they were forced to come to the assistance of the railroads. You can't get away from it.

Mr. MACBETH. You and I have identical views there, but this bill does not so provide.

The CHAIRMAN. You stated a moment ago you thought $10,000,000 would be insufficient. Give us your idea.

Mr. BONITZ. Take ferrovanadium—take ferrotungsten—chrome doesn't run into so much money, but it is considerable. You could put it in this room almost—$10,000,000 worth of ferrotungsten.

The CHAIRMAN. The original bill provided for $50,000,000 as a revolving fund for the purpose of handling the situation. In your opinion, it would be better to leave the $50,000,000 in the bill?

Mr. BONITZ. Yes, sir; you take tungsten alone—say, at $2.50 a pound, you would not have about 2,000 tons of ferrotungsten. That is only about four months' supply in this country.

The CHAIRMAN. With a $50,000,000 revolving fund, the administrator, I believe, could perhaps handle from $150,000,000 to $175,000,000 worth of these materials.

Mr. BONITZ. Certainly. We are doing a business that runs into several million dollars, and we have not several million dollars capital by any means, and it is the same proposition that you would have with your revolving fund.

The CHAIRMAN. This is a revolving fund that as the Government pays out from this fund for the ores, and then say we sell to the Hudson Reduction Co. or any other company, when the money would come in from you on the purchase of any of these ores, it would go in that revolving fund and could be used over again to purchase any of the other ores, and it would be coming into the fund as it was going out.

Mr. BONITZ. That is working capital, the same as any industrial concern would have, but you can not do it on $10,000,000. It is folly to try. You would be going back and asking for additional appropriations.

The CHAIRMAN. Are there any other questions?

Dr. MANNING. I would like to ask if you do not think, under the contract system provided for in this bill, it would be possible to help the mining industry in producing any of these minerals mentioned in the bill, subject to the terms of contract?

Mr. BONITZ. How is that again, Doctor?

Dr. MANNING. You enter a contract for the producing of tungsten. The Government could provide in that contract that it would furnish so much money if it became necessary to do it. It is a contract.

Mr. BONITZ. We have done that. We have advanced miners money. We would not buy property, but we advanced money to help develop.

The CHAIRMAN. Here is a man who has a property, but not the means to develop it. After an investigation you find that perhaps he can produce so many hundred pounds of ore, but he will have to have the money in order to bring the production. You will advance certain amounts to him so that he can carry on his work and that is deducted from your purchase price.

Mr. BONITZ. I think it is a very good idea. We have not made a practice of it. We have done it in half a dozen cases—not a practice.

The CHAIRMAN. You understand that will be the operation of the bill under consideration?

Mr. BONITZ. That is the way I understood it, and I was surprised when this gentleman put the question to me, because I interpreted the bill that it was to help the miner.

Dr. MACBETH. Debate on this bill in the House of Representatives, the chairman of the Committee on Mines and Mining stated in answer to a direct question that not one dollar of this money was to go for the purpose of assisting the productive miner.

The CHAIRMAN. Did he mean it was not to be given to the miner in buying his properties or simply to authorize a substantial price for it, so as to encourage him in the production, and that the Government would have authority to advance him this money to assist him in the development?

Dr. MACBETH. Well, that is an iridescent dream. Let me tell you something. One of the largest companies in the United States—one of the largest development companies in the United States—a concern that you know well, last year examined 372 properties. Of those 372 properties 3 were set aside for further examination. Upon another examination being made two of these properties were dropped and some work was done on the other property. Now, who is going to determine as to whether this property would justify the investment of money or not? This concern examined 1,000 properties, and all they had was a little development work on one. How are you going to determine all of that?

The CHAIRMAN. The same thing might be said of the shipping situation and various other industries that the Government is now taking an interest in.

Mr. BONITZ. They are bound to come to you, mark my word. If they are helping one—you can not build a ship, you can not do a thing in this world without alloys, and it is up to the Government if you can not get the private capital to come to the rescue.

The CHAIRMAN. Do you interpret the licensing feature of this bill to apply particularly to miners or the producer or to the companies that sell alloys—your own company?

Mr. BONITZ. No; we don't need any assistance. All of the assistance we need is from the miners.

The CHAIRMAN. Well, on whom do you think the licensing feature should fall, if on anybody?

Mr. BONITZ. Well, what do you mean—from a sales standpoint?

The CHAIRMAN. Yes.

Mr. BONITZ. Oh, I think you should license the furnace men, as well as the producers, and I think you should have a check upon every pound of tungsten or any alloy that your commission thinks there will be a shortage or possible shortage on—a check on every pound, every ton, of ore that goes into any plant and every pound that goes out, and where it goes to.

The CHAIRMAN. In other words, you are willing that the Hudson Production Co. should be licensed, and the handling of the tungsten ore and the ferrotungsten, after it has been reduced through your plant, should be under Government control?

Mr. BONITZ. Absolutely under Government control, provided you make a price on the concentration of so much per unit, whatever it may be; the price for ferrotungsten shall be so much per pound of tungsten contained. You see, ferrotungsten runs from 70 to 80 per cent. They only pay for the tungsten content. You have got to protect the furnace man, if you are going to protect the miner.

The CHAIRMAN. Protect them all along the line?

Mr. BONITZ. Protect them all along the line. Don't you think so, Doctor?

Dr. MANNING. Yes.

The CHAIRMAN. That, as I understand it, would be the object of such legislation.

Mr. BONITZ. That is the way I interpreted the bill.

The CHAIRMAN. You pay a certain price to the producer for tungsten ore; you reduce it; it has cost you so much; then you sell it to the trades and industries, and you would like to be allowed to make a reasonable profit on your investment.

Mr. BONITZ. Getting back there for a second. You take ferrovanadium, for instance. Now, there is very little of that produced in this country from domestic ores. There are only two concerns, and those are the Primos Chemical Co. and the Standard Chemical. Now, vanadium is not as necessary as tungsten. They can do without it; but it helps tool steel a great deal. They don't use—well they use 1 per cent, whereas in tungsten they use 15 to 16 per cent. There is a lot of vanadium in this country. That is where I lost my money, down in New Mexico on a vanadium proposition, and a good lot of it, too. If you are going to consider any bounty proposition, vanadium is well worthy of consideration, because there is plenty of it in this country that the small men can get out in spots, where you or I, or anyone else, would not put two or three hundred thousand dollars in it, because it is all spotty. You could not get high enough grade, but it would not surprise me at all if you could produce 7,000 or 10,000 tons of vanadium ore in this country per year through the small miners.

The CHAIRMAN. The Government could go out and purchase these metals and ores and act as the distributing agency, and if your company needed any of them would know your needs and require-

ments and would allow you so much. If the Primos Chemical Co. needed any they would allow so much to go to it. In that way the trades could be supplied regularly.

Mr. BONITZ. I think that is a very feasible feature from the furnace man's standpoint, and it will mean quicker deliveries. I will venture to say that we have spent in the last three years $100,000 in express charges in bringing ore from the West.

The CHAIRMAN. That means that the Government pays that much more for the manufactured article?

Mr. BONITZ. No; we have to spend it if we are short on contracts—time contracts. We may have bought ore for $18 at the time and that contract will cover a period of three or six months.

The CHAIRMAN. Yes; but now, for instance, say you buy some tungsten ore. Where do you pay for it?

Mr. BONITZ. At the railroad.

The CHAIRMAN. Now, you must pay the express to Pennsylvania?

Mr. BONITZ. Yes.

The CHAIRMAN. That costs you just so much more, does it not?

Mr. BONITZ. Yes.

The CHAIRMAN. Now, then, there is your cost in reduction. When you have reduced that and it is prepared and ready for use by a steel company your price to the steel company must necessarily be much higher than it otherwise would be if you did not have to pay all of those express charges?

Mr. BONITZ. We never would have it expressed unless we had contracts and had to meet our obligations—had to meet those contracts. The prices are just the same, but we took the ferro at $2.25 or $2.50—whatever the price might have been—and we had to express the whole tonnage; we are out of pocket the expressage.

The CHAIRMAN. You are simply living up to your contracts?

Mr. BONITZ. That is the whole thing. You know there is lots of talk, Mr. Chairman, regarding the situation of tungsten in this country and the requirements. I can not see where there is going to be a shortage this year or next year, but we have not got a supply that is going to last an awful long time unless you do get out in these fields and give them some encouragement to go ahead with it.

The CHAIRMAN. Have you enough on hand to last any considerable length of time?

Mr. BONITZ. Oh, no; we have not enough, I suppose, to make 200 tons of ferrotungsten. That takes a lot of money, you know, even to carry ore for that.

The CHAIRMAN. Any other questions? Senator Sterling, have you any questions you want to ask on the tungsten situation?

Senator STERLING. I think not.

The CHAIRMAN. I think that will be all.

## STATEMENT OF J. F. CALLBREATH.

The CHAIRMAN. Did you give your full name to the reporter?

Mr. CALLBREATH. Yes; I am secretary of the American Mining Congress, but I want to say, Mr. Chairman, that I do not speak on behalf of the American Mining Congress, because of the fact that its members hold various views upon the form which this legislation

should take, and some of them believe there should be no legislation upon the subject. It seems to me that there is very great need for legislation of this character. Just what its form should be is one of the things which your committee has under consideration, and I have no doubt that when you have finished your investigations you will arrive at that form of bill which will best serve the purpose.

We are confronted with a situation which justifies legislation which in ordinary times would not be properly considered. When conditions are normal the law of supply and demand is the one law which can be trusted to meet every emergency with reference to the supplies which the country needs. The present emergency has been created by the fact that the shipping which heretofore has supplied our trade with necessary materials has been of necessity taken from that service and put into the foreign service. The steel industry needs about 600,000 tons annually of manganese ore in excess of the home production in order to make the material which is essential to carry on the war. That supply, which has heretofore come from Brazil, being withdrawn, how can we, without taking the ships from the foreign service and importing this ore, supply that deficiency and do it quickly? This one emergency justifies legislation of this unusual character. I feel that in meeting this emergency we should also look into the future and, if possible, so assist the mining interests of the country as to develop permanent industries which will, so far as it is economically possible, take care of the industrial needs of the country for all time. In doing that I feel that we ought not to develop so many industries that there will be an overproduction nor so few industries as to fail to meet the whole situation.

The present time, when price is of little consideration compared to the necessity, is the one time when we might develop the new industries in such a way as to put them on their feet and that after the war those industries may be maintained.

The resources of this country in nearly all of the items mentioned in the bill are sufficient, I believe, for all emergencies. We have in the Cuyuna Range, in Minnesota, immense bodies of low-grade manganese ores, too low for making ferro-manganese used in the manufacture of steel, according to the present practice, in that they run below 30 per cent of metallic manganese.

Senator STERLING. By metallic manganese, you mean the finished product?

Mr. CALLBREATH. The manganese metal itself. The amount embodied in those ores runs from 15 to perhaps 30 per cent. I have brought before your committee some samples of a development which has been to me very interesting, and I believe points the road through which the future need for manganese ore in this country may be satisfied. You have had testimony by Mr. Kelley outlining the possible production of manganese from the low-grade ores of Montana by another process somewhat similar to this. This process has been developed by the Phelps-Dodge Co. in Arizona. I have some communications from those who have developed this process, and it seems to me that it would be instructive to make these communications, or excerpts from them, a part of the record. This letter,

dated April 23, is from Mr. Walter Douglas, president of the Phelps-Dodge Corporation and president of the American Mining Congress.

(The letter referred to is here printed in full, as follows:)

PHELPS DODGE CORPORATION,
99 JOHN STREET, CORNER CLIFF STREET.
*New York, April 23, 1918.*

Mr. J. F. CALLBREATH,
*Secretary American Mining Congress,*
*Munsey Building, Washington, D. C.*

MY DEAR MR. CALLBREATH: I have your letter of April 22, and am expressing you to-day the experimental products obtained from the leaching of low-grade manganese ores which has been carried out in our laboratory here. You will understand that the product is not a ferromanganese, but an almost pure manganese oxide, the chemical formula of which is $Mn_3O_4$ in the case of the samples in the two bottles, and $MnO_2$ in that of the fine metal in the bottle No. 6.

The method for a commercial test, for which we are now erecting a plant at Douglas, consists of dissolving the manganese from its low-grade ores by $SO_2$ gas from the copper furnaces; the evaporation of the resulting solution; and the roasting, drying, and washing of the slime, which makes the product shown in the bottles. This product contains, as you will see by the analysis, 68 per cent of metallic manganese and would probably make a very desirable material from which to make ferromanganese or spiegeleisen.

* * * * * * *

I would emphasize that the process is still in its experimental stages and has not yet been tested out on a commercial scale. If it is successful, however, it will permit of the economical treatment of low-grade manganese ores, which occur so widely throughout the West, and on account of the high manganese content of the product will permit of its being shipped to the eastern markets at a reasonable profit at present prices for the metal.

Yours, very truly,

WALTER DOUGLAS, *President.*

Mr. CALLBREATH. These letters are from Mr. G. D. Van Arsdale, the chemist who conducted these investigations.

(The letters referred to are here printed in full, as follows:)

PHELPS-DODGE CORPORATION,
*New York, April 23, 1918.*

Mr. J. F. CALLBREATH,
*Secretary American Mining Congress, Munsey Building,*
*Washington, D. C.*

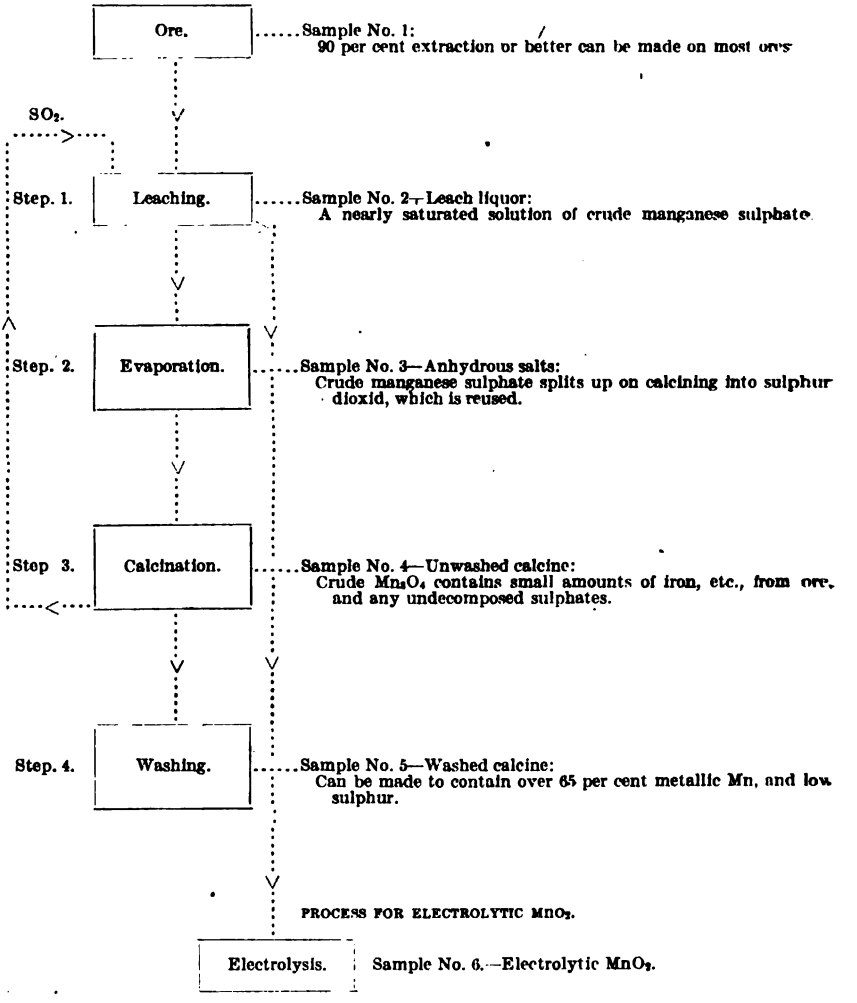
DEAR SIR: By direction of Mr. Walter Douglas, I am sending you by express six samples referring to our experiments on manganese extraction. These are described on the labels and also on the accompanying sheet, and on the latter their relation to the diagram showing the process is shown.

It may be noted that the sulphur dioxide which is given off when the manganese salts are calcined may be used cyclically where there is no supply of this gas, as at a smelter.

Yours, very truly.

G. D. VAN ARSDALE,
*Consulting Chemist.*

PROCESS FOR METALLURGICAL PRODUCT.


Ore.
Sample No. 1:
90 per cent extraction or better can be made on most ores
$SO_2$.
Step. 1.
Leaching.
Sample No. 2—Leach liquor:
A nearly saturated solution of crude manganese sulphate
Step. 2.
Evaporation.
Sample No. 3—Anhydrous salts:
Crude manganese sulphate splits up on calcining into sulphur dioxid, which is reused.
Step 3.
Calcination.
Sample No. 4—Unwashed calcine:
Crude $Mn_3O_4$ contains small amounts of iron, etc., from ore, and any undecomposed sulphates.
Step. 4.
Washing.
Sample No. 5—Washed calcine:
Can be made to contain over 65 per cent metallic Mn, and low sulphur.
PROCESS FOR ELECTROLYTIC $MnO_2$.
Electrolysis.
Sample No. 6.—Electrolytic $MnO_2$.

CHATTANOOGA, TENN., *May 1, 1918.*

Mr. F. H. CALLBREATH,
*Secretary American Mining Congress, Washington, D. C.*

MY DEAR MR. CALLBREATH: I received your letter of the 26th, acknowledging the samples we sent you from New York, and hope that these will be of use to the Senate committee.

As no doubt Mr. Douglas has explained to you, the method is still in the experimental stage and it is not possible therefore to give definite figures as to operating or installation cost. However, I believe that under reasonably favorable conditions the method should be profitable at present prices. Depending on mining costs and grade of ore, etc., I would say that the final product could be produced for not to exceed 2½ cents per pound of metalic manganese contained and under favorable conditions could be made as low as 1 cent.

We have had some samples of several ores from the Cuyana Range and have made over 90 per cent extraction on these samples, and from the figures for mining and other costs furnished to us I believe the method to be commercially applicable to the Cuyana Range material.

I do not think that a plant for say 100 to 150 tons daily ore capacity should cost more than $250,000.

Replying to your inquiry as to patents, there are several patents, application for which has just been made. Speaking for myself personally there would, of course, be absolutely no restrictions of any kind as regards use for the public benefit. I think it only fair, however, that if a profit should be made by operating the matter by private parties, some return should accrue to the patentees.

* * * * * * *

I am very much pleased that you are taking an interest in this matter, and I hope to be able to see you on my return.

Very truly, yours,

G. D. VAN ARSDALE.

Mr. CALLBREATH. This letter would indicate that there is a means through which we may adapt the lowest grade of manganese ores of this country to the highest use which is required by the steel manufacturers. We have in addition to the Cuyuna Range very large deposits of these ores of a higher grade in Virginia. The Arizona deposits and Montana deposits you have had some information concerning. Through various sections of the West manganese ore exists, and there seems to be no reason why these should not be developed to meet all of our requirements.

Senator STERLING. Will you state the cost again there at which they may be produced?

Mr. CALLBREATH. Possibly as low as 1 cent per pound, but the highest estimate was 2½ cents per pound. This work has only been done in a small furnace, and in an experimental way. Mr. Van Arsdale is one of the gentlemen who I am told always believe a thing is in an experimental stage until it has been absolutely demonstrated.

Senator STERLING. Well, now, the production of it on a large scale might be at even a lower cost than suggested there?

Mr. CALLBREATH. Yes, sir; I feel that both Mr. Douglas and Mr. Van Arsdale are extremely conservative in their statements concerning this method, and that we may expect at least as good results from its operation and uses as they indicate.

The CHAIRMAN. For the sake of the record, will you state who Mr. Douglas is?

Mr. CALLBREATH. Walter Douglas is president of the Phelps-Dodge Corporation, of New York and Arizona, and Mr. Van Arsdale is the chemist who has conducted these investigations.

Upon the subject of chrome, which is another very necessary ingredient of steel manufacture, we have considerable deposits in California and Oregon, and those deposits are of such a nature that it is believed a large amount can be produced. I have a letter from Mr. Albert Burch, president of the California Metals Mining Association. This is in a personal letter to Senator Phelan. I think perhaps I ought not to use it.

The CHAIRMAN. I do not know that you had, unless you get Senator Phelan's permission. You might offer it, subject to Senator Phelan's consent, later on.

Mr. CALLBREATH. Then I will just mark the parts to go into the record, subject to his consent to its use. In this letter to Senator Phelan Mr. Burch takes the position that the fixing of a minimum price, which was provided in the original bill, is an essential to bring out these small deposits, and while personally I doubt the wisdom of price fixing, I want his idea and the idea of his association

to go into the record. This is a letter from the secretary of the California Metal Producers' Association which was sent to the Members of Congress, and a copy sent to me.

(The letters referred to are here printed in full, as follows:)

CALIFORNIA METAL PRODUCERS' ASSOCIATION,
SAN FRANCISCO, *May 17, 1918.*

Mr. J. F. CALLBREATH,
*Secretary American Mining Congress,*
*Washington, D. C.*

DEAR MR. CALLBREATH: Inclosed is a copy of a letter forwarded to California Members of Congress protesting the elimination by the House of certain portions of the war minerals bill, which is self-explanatory.

If they want our chrome some provision must be made that will enable us to guarantee producers fair returns on their investment.

We trust that you will use your efforts to that end.

Very truly, yours,

ROBT. I. KERR,
*Secretary-Treasurer.*

MAY 17, 1918.

DEAR SIR: This association, representative of the California mining industry, most respectfully desires to register its protest against the elimination by the House of that portion of the Foster war minerals bill which provided that the Secretary of the Interior be permitted, with the approval of the President, to fix a guaranteed minimum price for a stated period of time for the purpose of stimulating the production of any one or more of the minerals referred to therein.

The War Industries Board has called upon California to increase the production of chromite, the mining of which in the United States is confined almost exclusively to California and a small section of Oregon.

This business is distributed among scores, if not hundreds, of small producers, because chrome is found only in small deposits and the business of mining it is too risky for large capital. The producers, too, are mostly amateurs, being made up of small ranch owners, professional men, and groups of storekeepers and small business men. Frequently they risk all they have when they start to open up ore bodies of absolutely unknown extent, some of which may prove to contain only 1 ton, while others may yield 500 tons. Those nearest the railroad are for the most part already exhausted, and roads or trails must be built if the others are to be mined, and, in addition to this, some are so low grade as to require concentrating machinery to make them available for use.

It takes time and money to build roads and trails, or even the smallest and simplest of concentrators; and, before a comparatively poor man can begin on either ,he ought to know whether a few months hence he can be reasonably sure of getting his money back. This assurance could be given by a Government guaranty of a minimum price, and in practically no other way.

It may be argued that a man could protect himself by a long time contract with a consumer; but even if one of these small producers could so much as get in touch with a real consumer, all of whom are in the East, he could not make a contract because the nature of the ore occurrence is such that he can not tell within 1,000 per cent how much he can produce; and no consumer would make a one-sided agreement such as this uncertainty would entail. The result is that the small producer has been from the start, and is now, at the mercy of the brokers and middlemen, who have contracts with consumers at fair prices, which they in turn fill by buying from the small producers at such prices as the poor men's necessities may dictate.

We believe that results will be obtained only by restoring the provisions of the original bill, which authorizes Government officials to establish a minimum price for a fixed period of time and we sincerely trust that an investigation of the matter will justify you in supporting such action as will bring about the restoration of the provisions above referred to.

Yours, most respectfully,

CALIFORNIA METAL PRODUCERS' ASSOCIATION.

MAY 15, 1918.

Hon. JAMES D. PHELAN,
*United States Senate, Washington, D. C.*

DEAR SENATOR: I am taking the liberty of inclosing a copy of a timely editorial from the Mining and Scientific Press, of San Francisco, and wish to call your attention more especially to that portion which refers to chrome.

My interest in the matter is purely patriotic, my connection with the production of the mineral being as follows:

In January, in response to my request to be assigned to volunteer work, I was asked by Mr. Alexander Legge, of the War Industries Board, to do what I could toward stimulating chromite production in California, but after beginning the work soon found that without further authority from Congress the board was not in a position to take the really necessary steps toward increasing production.

They expected then that such authority would be granted within a few months, and in the meantime I was asked by the Bureau of Mines to investigate the chrome and manganese situation in Cuba, which I did, spending a little more than two months there.

Since returning from Cuba on May 1 I have been attending to personal affairs, with the understanding that on June 1 I am to again take up the question of chromite production in California and Oregon, but this time as a volunteer in the service of the Bureau of Mines.

The first questions which I will be asked by the prospective producers of the mineral will be the same ones that were asked of me before, viz, "How long will the present price of chrome be maintained?" and "How can we get a square deal in marketing it?" These are the questions that the House of Representatives has said no one shall have authority to answer, and they are the questions which I hope the Senate may consider when the war-minerals bill comes before it.

As one of the Senators from California these matters should be of added interest to you, entirely apart from your interest in seeing that all the material needed to win the war is produced, for chrome mining in the United States is almost exclusively confined to California and a small section of Oregon.

The business is distributed among scores, if not hundreds, of small producers, because chrome is found only in small deposits, and the business of mining it is too risky for large capital. The producers, too, are mostly amateurs, being made up of small ranch owners, professional men, and groups of storekeepers and small business men. Frequently they risk all they have, when they start in to open up ore bodies of absolutely unknown extent, some of which may prove to contain only 1 ton, while others may yield 500 tons. Those nearest the railroad are for the most part already exhausted, and roads or trails must be built if the others are to be mined, and in addition to this some are so low grade as to require concentrating machinery to make them available for use.

It takes time and money to build roads and trails or even the smallest and simplest of concentrators, and before a comparatively poor man can begin on either he ought to know whether a few months hence he can be reasonably sure of getting his money back. This assurance could be given by a Government guaranty of a minimum price, and in practically no other way.

It may be argued that a man could protect himself by a long-time contract with a consumer, but even if one of these small producers could so much as get in touch with a real consumer, all of whom are in the East, he could not make a contract because the nature of the ore occurrence is such that he can not tell within 1,000 per cent how much he can produce, and no consumer would make a one-sided agreement such as this uncertainty would entail. The result is that the small producer has been from the start and is now at the mercy of the brokers and middle men, who have contracts with consumers at fair prices, which they in turn fill by buying from the small producers at such prices as the poor men's necessities may dictate.

In conclusion, I am one of many other volunteers who are willing to go on trying to obtain for the Government those materials which are of vital importance for winning the war, but I can not go on forever asking people to "make bricks without straw," and I am respectfully asking you, Senator, to do what you can toward restoring that provision of the original bill which would allow a Government official to establish a minimum price for a fixed period of time.

As to my own standing with the department with which I have become associated, I would refer you to Hon. Van. H. Manning, Director of the Bureau of Mines, or E. C. Bradley, assistant to Secretary Lane, and as to my local standing, to almost anyone interested in California mining, where I have been president of the California Metal Producers' Association since its organization there three and a half years ago.

Yours, respectfully,

ALBERT BURCH.

Mr. CALLBREATH. I would like to put in the record, Mr. Chairman, in view of the fact that so much difference of opinion exists as to the desirability of some of the clauses of the bill, the resolution which was adopted by the Colorado chapter of the American Mining Congress at its annual meeting, and also a resolution coming in the form of a telegram concerning the Foster bill.

(The resolution is here printed in full as follows:)

RESOLUTION.

*Resolved*, That the Colorado chapter of the American Mining Congress and the Colorado Metal Mining Association are in full accord with the purposes of the administration as outlined in the provisions of the bill proposed by the war-minerals committee to create an administration for the mineral industry, and believes that important and much-desired results may be accomplished thereunder; but they trust that the powers conferred by section 12 will be so employed as will least disturb established enterprises and existing conditions, particularly those affecting labor.

As attested by the Federal Bureau of Mines, Colorado can greatly increase its output of manganese and pyrites, as well as the rare minerals, tungsten, vanadium, and molybdenum. Adequate and stabilized prices as provided for in this bill will enable producers of this State to contribute a large proportion of the amount necessary to take the place of imported ores and minerals.

The mining men of Colorado herein express their desire to cooperate to the fullest degree with the Government in its efforts to increase the production of minerals necessary for the successful prosecution of the war, and tenders the facilities of their organization unreservedly to that end.

Adopted at a representative meeting of tungsten, molybdenum, pyrites, vanadium, and manganese producers of Colorado at a meeting held in Denver, April 2, 1918.

M. B. TOMBLIN, *Secretary*.

(The telegram is here printed in full as follows:)

DENVER, COLO., *April 30, 1918*.

JAMES F. CALLBREATH,
*Secretary American Mining Congress,*
*Munsey Building, Washington, D. C.:*

Meeting to-day, representing 95 per cent Colorado output of tungsten, more than one-third of country's entire production, unanimously opposed elimination of price fixing and licensing provisions in Foster bill, as proposed in Senate. Believing that adequate and stabilized prices is the only feasible way to increase output, Colorado producers are opposed to fifty-fifty, and bonus provisions proposed in Henderson bill if that includes elimination of price fixing. With what information we now have Colorado chapter will support Foster bill. Will endeavor to have cooperation of all principal producers of other States. Under Foster bill with reasonable fixed-price production of tungsten manganese pyrite can be increased from 75 to 100 per cent.

M. B. TOMBLIN, *Secretary*.

Mr. CALLBREATH. A later telegram from the same source says:

(The telegram is here printed in full as follows:)

DENVER, COLO., *May 4, 1918*.

JAMES F. CALLBREATH,
*Secretary American Mining Congress,*
*Munsey Building, Washington, D. C.:*

Replying to your day letter. Immaterial how affected, but adequate and stable prices only way to increase production in Colorado. Tungsten output

Boulder Field has decreased 25 per cent past six months on account of present price, making it unprofitable to mine only favored properties. Obviously lower prices would mean further decrease, and higher prices permit output from lower grade mines. Assume that administrator before final action is taken will consider facts which Colorado producers can present on cost of production if increased output is desired.

M. B. TOMBLIN, *Secretary.*

Mr. CALLBREATH. I also have a telegram from the secretary of the Utah Chapter of the American Mining Congress.

(The telegram is here printed in full as follows:)

SALT LAKE, UTAH, *May 2, 1918.*

J. F. CALLBREATH,
*Secretary American Mining Congress,*
*Munsey Building, Washington, D. C.*

We have to-day sent following telegram to Mr. Westervelt, of War Minerals Committee: Since our telegram to you April 20, we have received copy of a minerals administration bill proposed to be introduced by Senator Henderson. This was considered with Foster bill at meeting of chapter to-day and as result meeting decided by unanimous vote that Henderson bill meets our views more fully than Foster bill and that therefore our indorsement should be given to Henderson bill.

UTAH CHAPTER AMERICAN MINING CONGRESS,
A. G. MACKENZIE, *Secretary.*

Mr. CALLBREATH. These communications practically represent the various views concerning the price-fixing clause which have come to my office. Personally I feel that any price fixing, except as a dire necessity, is dangerous. We have had price fixing in the coal situation in this country, and I do not know very many people who are pleased with it. As an illustration, I have a price tabulation issued by the Ore and Coal Exchange in Cleveland, Ohio, showing many different prices upon coal in the Cleveland market, on similar grades. This comes about by the fact that a price fixed on coal at one point and the freight to Cleveland from that point are arbitrary and, therefore, the Lake trade is forced to take coal at different prices for the same purposes. There is no opportunity of competition to exert itself, and it is quite evident that confusion and little else can result from such a situation.

A difference of 35 cents for coal at the Lakes exists whether it be bought in Pittsburgh or in West Virginia.

That situation in itself, if transportation was sufficient to meet every requirement, would be fatal, but when it occurs that unless this coal is transported through the Lake ports in time to be distributed over the Lakes, to the northwest, and the dealer in Cleveland finds that he may buy coal in Pittsburgh for 35 cents a ton less than he may buy it in West Virginia, he is very likely to delay his order, hoping to get the Pittsburgh coal. The Pittsburgh district is overworked. The West Virginia district has coal to spare. The delay created by this hope of making that additional 35 cents is likely to assist in the creation next winter of a worse condition than we have had in the past. It is one of the perplexing conditions which grow out of interference with the law of supply and demand, which has regulated the distribution of products throughout the world's history, in the only successful and effective way. It may be necessary under present conditions to fix prices. It is probable that the administration which would be appointed under this bill, if given the power to fix prices, would exercise that authority with the great-

est degree of wisdom, but, unless it is so exercised, and unless it is only exercised to meet a very immediate and present emergency, it is bound to be disastrous, and because of that I feel that price fixing is unwise.

Senator STERLING. You take the three metals you have mentioned, Mr. Callbreath—manganese, chrome, and tungsten—are you able to make a comparison between the prices of these several products before and after the war, or since we got into the war?

Mr. CALLBREATH. I am not, Senator; others are better able to give those prices correctly. I could get those for you, if desired, but I would not undertake it from memory.

Senator STERLING. It struck me that that would be a very interesting fact for us to know in connection with some of the statements in those letters, to the effect that a price must be fixed. I wonder what the price is now, and what the price was then. Perhaps the record may already show.

The CHAIRMAN. I think it does; and besides we have the statistical summary for the mineral substances contained in this bill.

Senator STERLING. Do you think, Mr. Callbreath, that the uncertainty as to how long this extraordinary demand for these various ores will continue deters investment, or is likely to deter investment?

Mr. CALLBREATH. It is most certain to deter investment in any enterprise which depends upon the present high prices in order to be successful, and which, when the war is over, and the shipping is released, would come in direct competition with ores from foreign countries, which could be produced there at very much less than the cost of production here. The price of manganese ore, laid down in this country from Brazil, before the war, was perhaps less than the cost of the transportation of that ore would have been from the Cayuna Range, in Minnesota, to the point of consumption.

Senator STERLING. It might be well, then, to regulate the matter by protecting our home producers.

Mr. CALLBREATH. That undoubtedly is true, and yet, if the manganese ore from Brazil could be laid down here at a cost of $15 a ton, and the ores of this country would necessarily cost thirty or forty dollars a ton to produce, it might not be wise to fix a protective tariff which would enable ores at so much higher cost to be used. The fixing of a minimum price is for the purpose of protecting the producer. The fixing of a maximum price is for the purpose of protecting the user. The law of supply and demand has operated so as to protect the consumer, except for very short periods of time. You have had statements made concerning the zinc situation. When the price of zinc went to a high point, the production was so stimulated that in a very short time the supply was in excess of the demand and the price dropped to a point so low that the industry was almost stagnant. Temporarily the disposition was to fix a maximum price to keep down the price of zinc. In fact, that was done by the Government as to its own purchases. But immediately the high prices so stimulated production as to regulate the situation, and the price dropped to a point lower than should be. That condition will always prevail in an industry which is already established, but it will not operate to develop the machinery of production, which is expensive, unless that machinery has a guaranty that it may operate long enough to reimburse itself.

Therefore, I think that this bill should guarantee that the man who invests his money in these enterprises, which before the war could not exist in the face of foreign competition, shall be permitted to amortize his increased expenses during the time of the high prices. The fixing of a minimum price for a definite period of time would probably accomplish that, but I believe it could be accomplished fully as well by specific contracts with certain individuals under which they know exactly what they must do to meet the known demands. If the product produced by virtue of that stimulation should be slightly excessive, the Government is in position, under the bill, to protect itself and dispose of its surplus products, but if the offer was unlimited for a three-year period, with a fixed minimum price, by which the Government agreed to take all of the ores which could be produced in this country at a price which would justify the increased cost of developments and installations, my fear is that the Government might find itself in possession of an enormous supply of these minerals, which would be an enormous burden upon the country, and that would not be the worst result. The worst result would be that the Government, having those materials upon its hands, would be obliged to dispose of them, and these plants which had been created for the production of that excess supply would be forced into competition with the Government and would be obliged to close their doors until the Government supply was disposed of. That would seem to be an uneconomic way of stimulating this production. Therefore, my belief that the Government should fix the minimum price on just so much of this product as it is certain to need—as it believes to be essential.

We have had before your committee two or three gentlemen for whose judgment I have the highest regard, who have opposed the whole bill in principle. It was stated to you that if the steel industry of this country were notified that at a certain time importation of manganese ore would be absolutely cut off they would go out and offer to producers the same inducements which the Henderson bill provides that the Government shall offer, and by the same method would get the supply which they need. If time enough existed, that is true, but the element of time is such that I doubt the wisdom of waiting for them to be forced to that situation. Mr. Kerr, who represented the United States Steel Corporation, said that he did not believe in the necessity of this legislation, but in the same breadth he told you that it was necessary with the steel industry of this country to have an importation of 35,000 tons of manganese ore imported each month from this time on to sustain it. Now, I don't say that this would be the course of the steel industry, but if the stimulation of home production is delayed until the steel ordnance requirements of the Government for war purposes are such as to require the immediate importation, it is then too late to stimulate home production, and the Shipping Board would be obliged to surrender and bring in the cheap ores which the steel industry, of course, would like to have.

I feel that the Government itself can well undertake to stimulate the production of our home resources, having in mind the establishment of permanent industries and that the steel users of the world can well pay if it is necessary to do it, a slightly increased price, in order that all of the resources of our own country, may be utilized in steel manufacture.

Some discussion has taken place as to the amount of appropriation mentioned in the bill of $10,000,000. I would like to say, Mr. Chairman, that it seems to me that appropriation is entirely inadequate. As an illustration, it is stated that the amount of manganese ores which are required to be imported to maintain the steel industry is approximately 600,000 tons annually. The market price a few days ago was $56 per ton. Upon the theory that $50 per ton is a proper price 600,000 tons of ore, or one year's supply, would cost $30,000,000.

It is stated that in ordinary times the steel industry believes that a year's supply is as little as safety requirements would permit. Now, if it is wisdom for the United States Steel Corporation to provide a year's supply of its materials in ordinary times it certainly would be wisdom on the part of the Government, if it undertook to supply it at all, to count on creating a year's supply of that material. That would require $30,000,000. That is but one of the minerals which are involved. It has been estimated that a year's supply of the minerals which are mentioned in this bill of which there is a shortage, the supply which has been cut off by lack of importations, would amount to $200,000,000. Fifty millions of dollars would only be adequate to carry out the purposes of this bill by virtue of it being a revolving fund, which could be turned over. I do not believe that $10,000,000 will answer the purpose, and I feel that your committee would serve the purpose of this legislation by increasing that amount to at least $50,000,000.

Among the minerals mentioned in the bill is one to which there has been given very little attention, and that is potash. The potash requirements of this country are something that do not appear as being important, and yet it is perhaps more important than all of these. We have been told frequently that food will win this war. We are certainly faced with the situation that without food the war can not be won. The supply of potash in this country, in times past, was almost entirely supplied from Germany. The cutting off of that product is beginning to have, I believe has already had, its effect upon the agricultural production of this country.

The price of potash in the old times was approximately $40 per ton. The farmers of this country were able to use it in considerable quantities at this price, but when the price has gone to $400 per ton and scarcely enough of the potash available for explosive work, the farmers are practically left without that fertilizer which is most important. Potash is one of the ingredients which the plants take from the soil first, and unless it is returned, the soil very soon becomes exhausted. Most of you, perhaps, recall the farmer whose hay was being hauled to the market and the remark of his more wise neighbor who kept a dairy farm and returned the fertilizer ingredients to the soil. "There goes part of our neighbor's farm." It was strictly true. The man who sold his hay, year after year, soon had no hay to sell, and it did not take many years to accomplish that result.

We find upon examination that the imports of potash for the years 1911, 1912, and 1913 ranged over a million short tons; in 1914, 783,720 tons; in 1915, 108,000 tons; and in 1916, 11,877 tons; 1917, 11,986 tons. The value of this product during the years 1916 and 1917 was $425 in 1916 and $500 in 1917, a price which is utterly and entirely beyond the power of farmers to pay. Mr. Day suggested

yesterday the policy of a bounty rather than a minimum price as a possible remedy for the situation. A bounty in itself, like the fixing of a minimum price, might entail a responsibility which the Government might find it difficult to meet, but a bounty upon any product for which the use is practically unlimited, of which the greater the amount used the greater the prosperity of the country, might be a very feasible proposition.

We find that the use of potash, which is used very extensively in Germany and France, because it is close by and a cheaper product, has brought about a condition, coupled with intensive farming—I am not giving all the credit to the potash—that in Germany the average production of wheat per acre, for five years, ending 1913, was 31 bushels to the acre. The average production in France, where the potash used was less, was 19 bushels to the acre, while the average production in the United States, of wheat, was 14 or 15 bushels per acre, and yet we are tilling new land from which the fertilizing ingredients from the soil have not yet become entirely exhausted.

Senator POINDEXTER. Have you got the average of Great Britain?

Mr. CALLBREATH. I have not the figures, Senator, but they are equally instructive along that line, I have no doubt. It is needless to have further argument along that line. The question is where can we get a supply of potash to meet that situation, and is it not essential that we make an effort before our lands are impoverished, in order that not only the war needs of the present but our own domestic needs of the future for production in food products shall not be diminished.

The country is filled with feldspathic rocks carrying potash. In many parts of the country there is sufficient material, but it is of a character which is expensive to put into the soluble form which is required for agriculture. The German deposit was a deposit which was soluble to water, and it was more of a nature of our own Searles Lake deposit, in lower California, and in the lakes of western Nebraska, from which a considerable production is being brought about. Those deposits are not very extensive and we can anticipate the time when they will be exhausted. We are in this country developing a good deal of potash from the fumes of cement plants by the process which was developed by the Bureau of Mines, known as the Cottrell process, and very great assistance will be lent from that source, but nothing like enough to meet the requirements.

Senator POINDEXTER. What has been done, if anything, toward producing it from the kelp out on the Pacific coast?

Mr. CALLBREATH. There has been some effort in that respect and there has been some production. I think the papers before your committee now fully and accurately cover that, but there has been a development from that source; but assuming that all of those sources from which potash is now being gathered will be worked to their fullest extent, it will probably not meet more than 10 per cent of the demand for agricultural uses in this country. That being the case, it would seem wise that an effort should be made to develop a process by which our own potash material can be used.

I have a letter from Mr. Irving Howbert, who is president of the Portland Gold Mining Co., at Cripple Creek, Colo., which, I think,

would be instructive, and with your permission I will read it into the record.

(The letter is here printed in full, as follows:)

THE PORTLAND GOLD MINING CO.,
*Colorado Springs, Colo., April 16, 1918.*

Mr. J. F. CALLBREATH,
*Secretary the American Mining Congress,*
*Munsey Building, Washington, D. C.*

MY DEAR MR. CALLBREATH: I delayed answering your letter of March 9 for the reason that I was not sure as to the best methods which the Government should follow in an effort to stimulate the production of those minerals of which our production is short, and which have heretofore been imported from foreign countries. However, it is perfectly apparent that something must be done along that line, and I am going to make some suggestions in reference to the development of the potash industry, which I hope may prove of value.

Some months ago the fact that the gold-bearing rock of the Cripple Creek district contained an unusual percentage of potash was brought to the attention of the officers of the Portland Gold Mining Co. by representatives of the Federal Bureau of Mines. Later an arrangement was made by which the bureau sent us an expert to superintend experiments along the line of the economical extraction of that mineral. These experiments we have had under way for some time with every indication of satisfactory results. Repeated tests have shown that all of the eruptive rock within the mineral area of the Cripple Creek district contains in excess of 7 per cent of potash, or an amount equal to about 140 pounds per ton.

The two reduction plants located here, the Portland and the Golden Cycle, have waste dumps amounting to between five and six million tons, which material contains virtually the same percentage of potash as the raw ore. With a plant especially designed for that purpose there is little doubt but a recovery of a quarter of million tons of potash can be made from these dumps.

Under ordinary conditions the Portland Gold Mining Co. might be inclined to undertake the construction of a plant for the development of the industry, but, as you know, the gold mining companies are carrying on operations under great difficulties and I doubt if under present conditions our company will be able to undertake the work on any considerable scale unless we receive Government assistance.

I am convinced that at no place in the United States could the potash industry be started and developed under more favorable conditions than at this place owing to the fact, as I have stated above, that there is here an enormous amount of potash-producing material, pulverized and all ready for the furnace. We have the necessary coal near by and abundant railroad facilities for distributing the product.

The mills here are adding about 1,000 tons per day to the existing dumps, and in the Cripple Creek district the mills of the Portland Co. are adding 2,000 tons daily to the dumps there, which can be brought here and treated later for the potash contents, if found desirable.

The possibility of building up a great industry in this region that will be of benefit not only to this State but the entire country interests me very much, but I am even more interested in the development of all industries that will tend to hereafter reduce our imports from enemy countries to a minimum.

If any further facts are desired in connection with this matter, I shall be very glad to furnish them at any time upon request.

Yours, very truly,

IRVING HOWBERT.

Mr. CALLBREATH. The amount of potash, which seems to be of very great magnitude, that could be produced from the dumps which are described would only be the beginning. As you have seen, we were importing a million tons from Germany each year, and the total production from the dumps will be less than one year's importation. If that were the only deposit in the country we might look with a good deal of trepidation as to the future of our agricultural production, but it is not. In almost every section of the country rocks exist of the

character which contain potash material. It seems to me that Mr. Day's suggestion of offering a bounty for the production of potash would be a very wise provision.

Senator POINDEXTER. Would you make the price of it higher than it is now to the farmer?

Mr. CALLBREATH. No; it would have to be made lower, or the farmer can not use it. The farmer can not use $500 potash.

Senator POINDEXTER. If you make it lower that would retard the production, would it not?

Mr. CALLBREATH. I think that the Government might well assist the farmer by helping to pay for the potash, in order to bring about its use.

Senator POINDEXTER. Now, if the normal price before the war was $40 a ton, as you say, without regard to accuracy of figures, just for illustration, and it is now $500 a ton, don't you think $500 in comparison to $40 is sufficient bounty encouragement to production?

Mr. CALLBREATH. If the high price were to be permanent it would be, but if it is to be only for a year, and a quarter of a million dollars is required to build a plant, the construction of which would take until the high-price period had passed, it would not be a sufficient encouragement; in other words, the guaranty must be continuous. If the price of $500 or $150 per ton was to be a permanent price there would be no doubt in my mind of the production. I have it from other sources that the cost of manufacture of potash from the Cripple Creek ores would probably not exceed $100 per ton. That is the estimate, and the probabilities are that for less than $100 a ton, but not as low as $40 a ton, this production can be stimulated.

Senator POINDEXTER. What about the phosphate rocks in this country as containing potash, or substitute for it, as a fertilizer?

Mr. CALLBREATH. It is very important that that should be utilized as well. We have large phosphate-rock deposits in Montana and Utah and perhaps other States.

Senator POINDEXTER. Several million acres?

Mr. CALLBREATH. Several million acres.

Senator POINDEXTER. Does that take the place of potash?

Mr. CALLBREATH. No; it is a valuable fertilizer for certain things but does not take the place of potash. Potash is one of the first ingredients which the plants get from the soil, and it is very necessary that the supply shall be continuously renewed.

Senator POINDEXTER. Well, don't these phosphate rocks contain a large per cent of potash?

Mr. CALLBREATH. They contain potash, but their principal value is in the phosphate. They contain a small amount of potash. The Geological Survey has issued a bulletin on potash, which carries a great deal of valuable information upon that and carries most of the figures, some of which I have presented to you.

Senator POINDEXTER. Will you cite that bulletin by number so that it can be identified, and let the citation go in the record.

Mr. SMITH. It is marked "Separate on Potash in 1916. From Mineral Resources of the United States, 1916."

Senator POINDEXTER. Has it a number?

Mr. SMITH. No; it has no number; part of an annual volume.

Mr. CALLBREATH. In connection with the theory of bounties, I have here the Canadian acts with reference to both petroleum and lead, which are to my mind very instructive as connected with a matter of this sort. Under these Canadian acts a certain stipulated amount was appropriated to be paid in bounties, the bounties to cease when that amount had been exhausted. The bounty was to be paid upon lead production, whenever the price went below a fixed stipulated amount. If the price of lead went above that amount the payment of the bounty immediately ceased. In other words, it was a direct offer to the producers, "We guarantee you that you shall get a certain price; you sell your product upon the market, and whatever the market price is below this fixed price we make up the difference to you in the form of a bounty." Under the provisions of that bill in the year 1909 the Canadian Government paid $307,434 as a lead bounty; in 1910, $340,542.

Senator STERLING. It was really making up the guaranteed price.

Mr. CALLBREATH. Making up the guaranteed price; in 1911, $248,535. When the price of lead began to go up, in 1914, the amount of bounty was reduced to $8,179; in 1915, $3,217, and in 1916, $60. In other words, the market price had absorbed the differential and permitted the lead producers of Canada to continue operations.

The same results obtain with reference to petroleum and a number of minerals. The production has been stimulated and industries have been developed by virtue of that bounty system.

The plan of the Henderson bill, which I feel has largely the right line, would permit a payment of that kind by virtue of a contract. It may be that the bounty provision might well be considered, and I am sure that your committee desires to do the thing that will bring about the result. The one thing that you have in hand to do is to win the war. It does not matter what it costs. If manganese ore, if chrome, if wheat and food ingredients are the essential things to win the war we must have them no matter what they cost, and, therefore, it seems to me that whether manganese ore costs $50 a ton or $5,000 a ton, if it is essential, we are going to have it, and I believe that through this legislation provision can be made by which the production can be brought out, the ships be released for the foreign service, and every requirement met at the earliest date.

We are told that 90,000 soldiers left our ports for France during the first 10 days of this month. The transportation of 270,000 soldiers per month and the transportation of the munitions and supplies and equipment which is necessary to maintain them is going to put the most severe tax upon all of the shipping facilities which the total allied forces control. We have no right to use shipping at any point when, by giving the highest price for material, we may release that shipping for war service. I believe, therefore, that the appropriation in your bill should be large enough that the agency which is entrusted to handle it shall have full power to accomplish its purposes without restriction, and with such an agency I feel sure that we shall attain the great purpose now in hand. I have, Mr. Chairman, a resolution from the Chamber of Mines and Oil of Los Angeles and a resolution passed by the Arizona chapter of the American Mining Congress concerning these bills which I would like to make a part of the record.

(The papers referred to are here printed in full as follows:)

CHAMBER OF MINES AND OIL,
*Los Angeles, Cal., May 6, 1918.*

Mr. J. F. CALLBREATH,
*Secretary American Mining Congress, Munsey Building, Washington, D. C.*

DEAR SIR: Attached hereto please find official copy of resolutions passed at the last meeting of our board of directors, which are self-explanatory.

In the opinion of our directors, much duplication of effort can be avoided at this time if all branches of our Government having to do with the mineral industry are coordinated under one departmental head, and they are firmly of the opinion that the time is most propitious for such action on the part of the Congress of the United States.

Very truly, yours,

CHAMBER OF MINES AND OIL,
G. M. SWINDELL, *Secretary.*

RESOLUTIONS BY THE BOARD OF DIRECTORS, CHAMBER OF MINES AND OIL, MAY 3, 1918.

Whereas there is now before Congress a bill to provide further for the national security and defense by encouraging the production, conserving the supply, and controlling the distribution of those ores, metals, and minerals which have formerly been largely imported, or of which there is or may be an inadequate supply; and

Whereas the Chamber of Mines and Oil is in full accord with the efforts of the war minerals committee to have legislation enacted which will result in the development within the United States of all minerals or ores necessary to the successful prosecution of the war; and especially of those minerals or ores now transported to this country by ocean-going vessels, which will permit the release of this sea tonnage for other purposes; and

Whereas existing bureaus or branches of the Government service, under which it is proposed to render such proposed legislation effective, are sufficient for the purposes thereof, provided their efforts are coordinated under one departmental head: Now, therefore, be it

*Resolved by the board of directors of the Chamber of Mines and Oil*, That we do urge upon the Congress of the United States the inadvisability at this time of the creation of the office of mineral director, but we do urge the immediate creation of a Department of Mines, the secretary of which would automatically become director of minerals, charged with the duty of harmonizing, unifying, and coordinating the activities, duties, and powers of all bureaus, surveys, commissions, or other branches of the Government, so far as they relate to the development, mining, or production of both metallic and nonmetallic minerals and ores, and that we do also urge upon Congress the creation of the portfolio of Secretary of Mines.

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ARIZONA CHAPTER THE AMERICAN MINING CONGRESS,
*Bisbee, Ariz., April 15, 1918.*

Mr. J. F. CALLBREATH,
*Secretary American Mining Congress, Washington, D. C.*

DEAR SIR: I take occasion to thank you in this letter for the attention given our request from Tucson to furnish copies of the resolution of the Arizona chapter indorsing the national administration to the Secretaries of the War, Navy, and Labor Departments, and to the Arizona congressional delegation.

Resolutions adopted in Tucson were contained in our Bulletin No. 52, forwarded to you last week. To provide against chance that the bulletin may have escaped your attention, I am inclosing copies of the resolutions, which are self-explanatory. It is hoped that the resolution declaring for a Cabinet position and separate department for the mining industry will meet with your present approval. Such assistance as you may extend to the resolution will be appreciated.

Very truly, yours,

J. E. CURRY, *Secretary.*

Whereas the production of minerals, including coal, iron, gold, silver, copper, lead, zinc, oil, gas, manganese, tungsten, and the rare metals is of vital importance to the Government in the winning of the war and in the development of its domestic and international commerce after the war; and

Whereas the industry in all its phases constitutes the greatest collective industry in the United States: Therefore be it

*Resolved*, That the sense of the Arizona Chapter American Mining Congress is that this great industry should not be subject to rulings and decisions of a subdepartment or any group of subdepartments of the Federal Government, but should be under the exclusive control of a department of mines, whose executive head should be a member of the Cabinet of the President of the United States: And further be it

*Resolved*, That a copy of this resolution be mailed to the Arizona congressional delegation, to the secretary of the American Mining Congress, and to the secretaries of the various State chapters of the Mining Congress with urgent suggestion that every effort possible should be made by them to give effect to this resolution.

Mr. CALLBREATH. These last resolutions urge the importance of the creation of a department of mines. My own belief is that if we had had a department of mines during the last few years, with its head a member of the President's cabinet, some of the mistakes which have been made with reference to the mining industry would not have been made. I feel that the real situation, which has really been the keynote of most of our industrial troubles, would have been avoided, had there been some man sitting at the President's table, with full knowledge of the conditions surrounding the mining industry, and while this subject is not before your committee at this time, I believe that the Mining Committee of the United States Senate might well consider the proposition of putting at the President's side a man who is familiar with the mining industry, in order that it may receive proper consideration when matters which seriously affect it are being determined.

We hope under this bill to stimulate production. We have, upon the other hand, Government requirements calling for an enormous tax. We have passed a war excess-profits tax law, which, in case a development is especially prosperous, undertakes to collect a tax which represents a large percentage of the profit, and there has been very much discussion as to the proper deduction, because of the depletion of reserve. The mining industry, which is not like an ordinary manufacturing business which each year has a plant of greater value than it had before, but a mine with a life of 10 years, each year sells one-tenth of its original holdings. If that return is considered as profit, and the Government is to take 60 per cent of that apparent profit, which was really a part of the original investment, it is putting a burden upon mining which the industry will not be able to carry.

The advisory committee of the Treasury Department is doing everything it can to so construe the present war excess-profits tax law as to make proper allowance for this depletion of reserves. The lawmakers did not have the wasting character of the mining business under consideration at the time of the passage of this law, and a strict construction of the law would be almost fatal to the development of the mining industry and to its continuous operation. It will require a liberal construction of the law to make it possible for the mining industry to keep on and make that production which is essential to our winning the war.

The CHAIRMAN. We will adjourn until 10 o'clock Monday morning.

(Accordingly, at 12 o'clock noon, the committee adjourned until 10 o'clock a. m., Monday, May 27, 1918.)

# MINERALS AND METALS FOR WAR PURPOSES.

**MONDAY, MAY 27, 1918.**

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met at 10 o'clock a. m. pursuant to adjournment, at room 450, Senate Office Building, Senator Charles B. Henderson (chairman) presiding;

Present: Senator Shafroth;

Also: George Otis Smith, Esq., Dirctor of the Geological Survey.

The CHAIRMAN. Mr. Callbreath, did you have any further statement to make?

Mr. CALLBREATH. Mr. Chairman, I do not think I have any further statement to make.

## STATEMENT OF J. F. CALLBREATH—Resumed.

The CHAIRMAN. I would like to go a little further into the licensing feature: have you given that any consideration?

Mr. CALLBREATH. Whether a licensing provision should be in the bill depends entirely, as I regard it, upon the other provisions. If a mining enterprise is to be established, to stimulate production in a general way of minerals, to the extent that production might be very much below the requirements so that the power of allocation should be necessary, then a licensing provision might be important. If the plan of the Henderson bill is to be followed, by which a contract is made by the Government for the purchase of a supply of these ores from many individuals, then the Government has power to allocate that mineral supply wherever it sees fit because it becomes temporarily its owner. Under those conditions there would be no necessity for a licensing provision. If a minimum price is established, and it produces a less amount of mineral than is required, then the power of allocation would be essential, and I would consider that the licensing provision would be necessary.

My own thought is that a minimum price, high enough to bring out the production of the expensively mined ores in most lines, would be likely to bring out so great a supply as to overstock the market, in which case the matter of allocation would care for itself. The development of greater facilities for production than would be required after the special demand has passed would be dangerous to the future management of those industries; in other words, it would not be economical for us to create the facility for producing a million tons of pyrites each year if, after the present demand has passed, we only

had use for half of that amount. By the establishment of a minimum price the Government is bound to take all that is offered at that price; it might result in creating a great surplus, which would be a constant menace to the industry thereafter until that surplus was used up.

In handling this matter great judgment must be used not to create conditions which will stifle industry after the war is over. The present necessity creates an opportunity to stimulate industries which may, after the war, remain in continuous operation to the exclusion of the foreign production, which we have been using heretofore. The licensing provision will be necessary, in my judgment, if a minimum price is established; otherwise not.

The CHAIRMAN. In regard to the provision of the bill which provides for taking over the idle mines and also taking over smelters, I would like to have your opinion regarding the advisability of legislation along such lines.

Mr. CALLBREATH. It seems to me that that provision is entirely unnecessary, and while it may not be dangerous it is threatening and disturbing.

There would seem to be no need for the Government assuming control of an idle mine or of any mine unless that mine was made idle by alien influences, in which case there is ample authority given the Alien Property Custodian to assume charge and operate. But I do not believe that there is any necessity for that in this bill.

The CHAIRMAN. Mr. White, are there any questions that you desire to ask Mr. Callbreath?

Mr. WHITE. There is just one matter in connection with that question of overproduction. Is it not apparent, Mr. Callbreath, that we probably will have to create an overproduction capacity to meet some of these war needs? These war needs are bound to represent more than is normally consumed. Is there any way to escape a temporary overproduction capacity?

Mr. CALLBREATH. I think not; but there should be a limit fixed, if it is possible. If the inducement was offered to everybody to produce manganese ore, and everybody who has manganese deposits should create facilities for production, you would have a greater surplus of capacity than you would have if you contracted for a stipulated amount sufficient for anticipated needs.

Mr. WHITE. Do you consider that there is any danger of overproduction in manganese and chrome? You understand that this bill only runs for a two-year period. Is there any danger of creating an overproduction capacity when we have at least 600,000 tons of manganese ore that has got to be produced per year and maybe 150,000 tons of chrome?

Mr. CALLBREATH. There would be little danger of oversupply, but there would be a great danger of overproduction capacity.

Mr. WHITE. The point, I understand, is that the bill can only run, as a maximum time, for a two-year period; that it takes, possibly, according to the evidence here, from six to nine months to open a new mine, and in that short period of time I do not quite see the fear of an overproduction situation. A man, presumably, if he goes into the business at a guaranteed price, has only a marketing period of probably 18 months, and it does not seem to me that, considering the people who would be tempted to go into the business, you should be

afraid of a serious overproduction. Of course, the understanding is that the man would figure on amortizing his investment at the price guaranteed in going in, so there would be no hardship. Even if his capacity is worthless after the war, the assumption is you are going to buy at the price guaranteed and create an overproduction capacity that you do not need. So how will that do the man any harm even if his property is scrapped after the war?

Mr. CALLBREATH. On the assumption that there are 50 available deposits in this country which give promise of successful development, and upon the assumption that 25 of those deposits properly developed will meet the demands, it would be a bad policy to stimulate the development of 50 plants when 25 would meet the requirements, because the other 25 plants would bring about a supercompetition after the war was over which would destroy them all.

There is a marked difference in the probable effect of a minimum price on agricultural products and mining products. The supply of minerals to last throught all time is immediately and presently available. The future supply of farm supplies must be produced a certain part each year. The world's supply of minerals, with proper work, may be mined, not within a year but within a very few years; so, taking the available supply of metal ready at this time for utilization, there is greater danger of overproduction than there would be if that crop were limited to a certain production each year.

Mr. WHITE. To get the two points of view in this matter, I may say that the testimony of the steel people who have been before this committee is that we can not produce enough ore in this country. The acid people, who have expressed any opinion on this subject, have had no fear of overproduction of domestic pyrite, and we seem to have apparently the point of view, I think, from our own investigation, that, for instance, in manganese, pyrite, and chrome there is no possibility of overproduction capacity when limited to the period in which this bill would act.

Mr. CALLBREATH. That may be true.

Mr. WHITE. I was simply raising the question. I was very curious to know on what ground there was such a serious fear of overproduction of those metals, because our examination of the deposits of the country do not warrant any fear in that respect. We are more afraid of not getting enough than of too much.

Mr. CALLBREATH. Your fear is of not getting enough within the immediate future. If it is possible, under the plan which I outlined. of treating low-grade manganese ores and making them into high grade—if that is possible upon a commercial scale, I take it there is no doubt of having enough manganese deposits in this country to more than supply any possible demand for many years.

Mr. WHITE. As I understand—just to finish the point, with respect to the question of overproduction of manganese, Mr. Kerr, of the Steel Corporation, testified that in normal times they thought they ought to have a year's supply on hand. They have less than five months' supply now. They are apparently short of their normal stocks.

This bill contemplates operation for a maximum period of two years, but we have new deposits that will have to be developed, and it will perhaps be more or less slow. It would be a period of six

months before they would by any possibility meet our demands: so it is only a year's time in which to accumulate an excess production, when apparently we need seven months' increase of stock to bring the industry back to its normal condition.

So with respect to manganese, it would seem that there is no danger of overproduction, particularly as this bill now carries the power to fix a tariff, during the period for which these contracts may extend, and keep out, if necessary, the cheaper-priced foreign ores. So it does not seem to me that you are going to incur a Government obligation of a large amount of this material, after it is turned over to the Government. There is no possibility that we will get into full working operation in less than six months, and maybe one year's time.

Mr. CALLBREATH. I should say not.

Mr. WHITE. And the administrator of this bill might make a contract not for two years, but for six months or a year. The discretion is to contract at a maximum of two years, with the possibility of using any time element intervening between that time.

Mr. CALLBREATH. I am fully in accord with the plan of contracting for these ores, and I do not think the limit should be placed at two years, but I do fear the possibility of fixing a minimum price, for two reasons: First, in fixing the minimum price there is always a disposition to fix it to meet the average cost, which practically shuts out the low grade, expensively mined operations, which may be necessary for quick production. In the copper investigations, which have recently been in progress here, the price has been re-fixed at 23½ cents for the next 75 days. A good many of the more expensively mined copper companies have announced that under that ruling they would be obliged to close their mines. Some of the larger mines are able to operate at a profit. We have heard it stated that one of the larger mines, which has increased its capacity from 30,000 to 40,000 tons, has done so at the cost of a reduction in saving from 72 per cent to 61 per cent of the content.

That increase of tonnage was for the purpose of meeting the Government demand. At the time that sacrifice was being made other low-grade more-expensively operated mines are being closed because the price is so low that they are not able to operate.

Mr. WHITE. Has not the price that has been fixed in the case of copper and of lead and coal been, in every case, in effect, a maximum price rather than a minimum price?

Mr. CALLBREATH. Yes: that is practically true.

Mr. WHITE. The argument does not apply then to the minimum-price feature; it applies to the attempt to fix a maximum price. Minimum, as I understand, simply means that you are guaranteed at least that much.

Mr. CALLBREATH. It applies to the violation of that law which has stimulated industrial operation in the past—the law of supply and demand.

Mr. WHITE. I thought that was rather clearly brought out in the testimony of Mr. Ingalls, when he said there was no normal market for tin any more. You can not have a law of supply and demand where we have conditions entirely disturbed. So we have no longer the operation of the law of supply and demand.

Mr. CALLBREATH. But in the production of copper the law of supply and demand might easily be allowed to prevail. In the production of coal, a maximum price to protect the consumer was a proper thing, provided that maximum price be large enough to cover the cost of operation of the more expensively-operated mines. The necessity of protecting the consumer may or may not have been a necessity.

Mr. WHITE. As I understand the working of the minimum price, its only interference with the law of supply and demand is to prevent a drop in the market below a certain point. The Government would assure the market to prevent the price going below a certain point, and that is the only interference with the law of supply and demand which the minimum price would have, and it would be a beneficial interference as far as the mining industry is concerned, to prevent the bottom dropping out of the market.

Mr. CALLBREATH. If that minimum were high enough to cover the cost of the operation of the most expensive production, it would work that way.

Mr. WHITE. Any guarantee that the bottom would not fall out of the market would be beneficial, whether it be high or low. I do not see how you can argue that any minimum price is a bad factor because it simply tells the producer that the price won't go below that. Of course, it can go over it. I do not think there can be any argument from the miners' standpoint against a minimum price which simply says that the price can not go below that amount, no matter how it would be fixed.

Mr. CALLBREATH. But a minimum price would in effect become a maximum price.

Mr. WHITE. I would like to illustrate that. The present price of graphite is in the neighborhood of 17 or 18 cents a pound. Suppose you should fix a minimum price at anywhere from 12 to 15 cents for a two-year period; I venture to say that every producer of graphite in the country would welcome a price that would not go back to the prewar conditions immediately, of even 7 cents or lower. It would be a halfway measure, but would it not be a comforting fact to the producer that the price would not go way back below the level after the war? What possible objection could the producer of graphite have to a guarantee between the present price and the prewar price which might be a fair price? I am simply illustrating that halfway price, which would not be so high as to cause overproduction and yet high enough to give the producer a certain amount of protection, and that, in my judgment, is not open to any objection.

Mr. CALLBREATH. I do not see any objection to a minimum price fixed on that basis, if the market is allowed to operate as to maximum prices. But, in effect, the minimum price becomes a maximum price.

Mr. WHITE. As far as I know, there has not been any minimum price with the single exception of the case of wheat. Have the Government activities established any minimum price outside of the price of wheat?

Mr. CALLBREATH. The price of coal was both the maximum and minimum.

Mr. WHITE. There has been a lowering of the price from the former level, as I understand it, to a definite fixed price. As I remember it, the first suggestion of price was when the coal operators

got together and offered to fix a maximum limit. There was no minimum price. The maximum, I believe, was $3.50 a ton.

Mr. CALLBREATH. $3.

Mr. WHITE. I want to draw this distinction that practically every price activity has been an attempt to fix a maximum price rather than guarantee a minimum, which I believe this bill as it now stands proposes, without any general price-fixing features.

Mr. CALLBREATH. If the bill anticipates a guaranteed minimum price, with not limitation upon the market price, then, from the standpoint of the producer, I heartily favor it. If it undertakes to fix a price which becomes both a minimum and a maximum, I think it is exceedingly dangerous.

Mr. MUDD. You mentioned the Alien Property Custodian, and his power to take over mining property in the hands of alien enemies. Suppose there was an idle property owned by the Germans, the title to which was taken over by the Alien Property Custodian. As I understand it, the custodian has no funds with which to operate a property, unless the company he takes over has a surplus, or unless he can use funds belonging to that company to work the property. You simply take over the title to the property temporarily, but it would remain idle.

Mr. CALLBREATH. I have not considered that phase of the situation.

Mr. MUDD. In other words, the Alien Property Custodian can operate going concerns but can not initiate operations in some enterprise which is not active to-day and which requires funds for its operation.

Mr. CALLBREATH. I can hardly suppose there are many properties, if any, which have been closed down because of alien influences which are worth operating.

Mr. MUDD. There may be some; I do not know that I can give you an example. But I do not think that this action of the Alien Property Custodian is quite analogous to what we propose to do under the clause which provides for the operation of a mine. You can not do it under those circumstances.

Mr. MACBETH. Mr. Mudd, Secretary Lane, in his testimony, in making his argument before the House committee, made the statement that it would be possible for anyone who desired to develop a mine to go before the War Finance Corporation and obtain funds for the purpose. Do you recall that statement of his?

Mr. MUDD. He may have said that.

Mr. MACBETH. Now, why could not the Alien Property Custodian properly go before the War Finance Corporation with the proper representation?

Mr. MUDD. At that time the war finance bill had not been passed. As I understand it, it proposes that money can be loaned only to a going and established concern. It does not provide for the operation of idle mines. Money will only be loaned to companies which have not been successful in obtaining funds through the ordinary banking channels, and, furthermore, in order to secure loans for the operation of properties you have to put up from 125 to 135 per cent of the value of the loan as collateral. Many owners of property can not approach that. We all know that the War Finance Committee is going to adhere to the strict letter of the law in the matter of loans and we know that mining corporations are having difficulties in get-

ting loans from the banks for their operations. I do not think that war finance is going to offer much relief under the circumstances that you describe.

Mr. GEORGE OTIS SMITH. May I ask Mr. Callbreath a question regarding his views on the maximum-price-fixing proposition?

The CHAIRMAN. Certainly.

Mr. SMITH. Mr. Callbreath, you think that the maximum price should be high enough to provide for the most expensively operated mine?

Mr. CALLBREATH. If a full production is required; yes.

Mr. SMITH. In the case of copper, which you mentioned, do you think operation of the most expensively operated mine is essential?

Mr. CALLBREATH. I think it is.

Mr. SMITH. And in the element of cost, of course, labor plays a very large part, and the thought that I wanted to suggest to you is whether, in terms of public interest, there may not be operations so expensive, in terms of labor, as to defeat its own purposes?

Mr. CALLBREATH. There must be a limit, of course.

Mr. SMITH. Is not that limit pretty well shown by the facts in hand. The year 1913 was what we might call something like a normal year in the copper production; 1916 showed a maximum production, due to war needs. Now, it happens that some figures are available, which have been compiled by Mr. Butler, of the Geological Survey, assisted, I believe, by Mr. Fay, of the Bureau of Mines, for the use of the War Industries Board. Incidental to those figures it comes out that comparing the 1916 large production with the 1913 production the increase largely came from the big mines, so-called. Ninety per cent of the increase came from the large mines.

Mr. Chairman, I think this statement, in part reprinted from a Survey publication, is worth putting in the record for the general purposes of the discussion.

The CHAIRMAN. Without objection it will be inserted in the record.

(The statement referred to is as follows:)

*Copper produced in the United States, 1913 and 1916, classified by mines in which copper was the most important metal and by those in which it was a by-product.*

| | Mines of which copper is the most important product. | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Less than 1,000,000 pounds. | | 1,000,000 pounds and less than 5,000,000 pounds. | | 5,000,000 pounds and less than 10,000,000 pounds. | | 10,000,000 pounds or more. | |
| | Number of mines. | Quantity (pounds). | Number of mines. | Quantity (pounds). | Number of mines. | Quantity (pounds). | Number of mines. | Quantity (pounds). |
| 1913 | 492 | 22,960,797 | 36 | 93,068,952 | 11 | 78,178,256 | 24 | 1,004,634,383 |
| 1916 | 914 | 50,497,875 | 55 | 131,708,061 | 11 | 84,123,586 | 31 | 1,711,395,262 |
| Increase | 422 | 27,537,078 | 19 | 38,619,109 | ..... | 5,945,330 | 7 | 706,760,879 |
| Percentage of increase | 85.8 | 120.0 | 52.8 | 41.5 | ..... | 7.6 | 29.2 | 70.4 |
| Percentage of production: | | | | | | | | |
| 1913 | ..... | 1.86 | ..... | 7.53 | ..... | 6.33 | ..... | 81.31 |
| 1916 | ..... | 2.52 | ..... | 6.57 | ..... | 4.19 | ..... | 85.32 |
| Percentage of total increase | 93.55 | 3.53 | 4.22 | 4.95 | ..... | .76 | 1.55 | 90.74 |

*Copper produced in the United States, 1913 and 1916, etc.*—Continued.

| | Total copper mines. | | Mines of which copper is not the most important product. | | Total. | |
|---|---|---|---|---|---|---|
| | Number of mines. | Quantity (pounds). | Number of mines. | Quantity (pounds). | Number of mines. | Quantity (pounds). |
| 1913 | 563 | 1,198,862,388 | 883 | 36,707,339 | 1,446 | 1,235,569,727 |
| 1916 | 1,011 | 1,977,724,784 | 837 | 28,150,528 | 1,848 | 2,005,875,312 |
| Increase or decrease | +448 | +778,862,396 | −46 | −8,556,811 | +402 | +770,305,585 |
| Percentage of increase or decrease | +79.6 | +64.9 | −5.2 | −23.3 | 27.8 | 62.3 |
| Percentage of production: | | | | | | |
| 1913 | ..... | ..... | ..... | 2.97 | ..... | 100.0 |
| 1916 | ..... | ..... | ..... | 1.40 | ..... | 100.0 |

An inspection of the table from Mineral Resources, 1916, Part I. shows that a large number of mines yield copper, but that the larger part of the production is from a comparatively small number of producers.

In 1913 more than 81 per cent of the output was made by 24 producers, each of which made more than 10,000,000 pounds of copper; in 1916 a total of 31 such mines produced more than 85 per cent of the output. Mines that produced less than 1,000,000 pounds numbered 492 in 1913 and 914 in 1916, and produced respectively, 1.86 and 2.52 per cent of the output for those years.

It is noteworthy that from 1913 to 1916 the percentage of the production from copper mines that produced more than 10,000,000 pounds each increased about 4 per cent, and that the percentage from copper mines that produced less than 10,000,000 pounds each decreased about 2.5 per cent.

The copper mines that produced 10,000,000 pounds each represented only 1.55 per cent of the increase in number of mines, although they yielded 90.74 per cent of the increase in copper, whereas the mines that produced less than 1,000,000 pounds each represented 93.55 per cent of the increase in number and only 3.53 per cent of the increase in production.

*Table showing copper production for 1916, subdivided on basis of labor required for production.*

| Production per man per day. | Mine production 1,000,000 to 5,000,000 pounds. | | Mine production 5,000,000 to 10,000,000 pounds. | | Mine production 10,000,000 plus. | | Mine production total | | Total days labor. |
|---|---|---|---|---|---|---|---|---|---|
| | Number mines. | Production (pounds). | Number mines. | Production (pounds). | Number mines. | Production (pounds). | Number mines. | Production (pounds). | |
| Above 300 pounds | ..... | ..... | ..... | ..... | 1 | 451,615,000 | 1 | 451,615,000 | 1,085,308 |
| Between 200 and 300 pounds | ..... | ..... | ..... | ..... | 4 | 286,240,000 | 4 | 286,240,000 | 1,244,354 |
| Between 100 and 200 pounds | 8 | 24,304,000 | 2 | 13,503,000 | 7 | 291,555,000 | 15 | 329,362,000 | 2,470,089 |
| Between 75 and 100 pounds | 5 | 11,251,000 | 5 | 39,394,000 | 9 | 484,244,000 | 19 | 535,189,000 | 6,780,781 |
| Between 50 and 75 pounds | 12 | 30,728,000 | 1 | 9,020,000 | 6 | 150,818,000 | 19 | 190,566,000 | 3,185,582 |
| Below 50 pounds | 18 | 43,987,000 | 3 | 23,054,000 | 2 | 33,477,000 | 23 | 100,576,000 | 2,606,026 |
| Total | 43 | 110,270,000 | 11 | 87,611,000 | 30 | 1,697,979,000 | 81 | 1,893,858,000 | 17,382,138 |

Mr. SMITH. If we define the copper mines whose production was between one and five million pounds a year as the small mines, mines having an annual production of between five and ten million pounds a year as the medium-sized mines, and those having a production of 10,000,000 and over per annum as large mines, we see a large differ-

ence in the per capita capacity of the mines. In 1916 the 43 small mines showed an average capacity of 51.8 pounds per man per day, taking the mining up to the point of transportation. The 11 medium-sized mines have a better per capita production, namely, 65.8, whereas 30 large mines show an average production of 121.6 pounds per man per day, or more than twice the production of similar mines.

The figures are even more interesting if we take some of the largest mines that we have. The four largest mines showed a production of over 300 pounds of metal per man per day as contrasted with the average production of the small mines of only 51 pounds per man.

Now, inasmuch as man power is one of the scarce articles in this country during the time of war conditions, is it not essential that any price-fixing should take that into account and not put the maximum price so high as to induce the employment of mining labor in the mines where each miner produces only a fraction of what he could produce in the big mines? Is that not simply one of the factors that must be taken into consideration?

Mr. CALLBREATH. Naturally, that must be taken into consideration. If it is found that the medium and larger mines fall a little short of the necessary requirements, then it becomes essential that the other mines shall also be operated, and under those conditions the question of increased cost can not be anything more than considered; it can not determine the question. Mr. Farrell stated at one of the recent hearings that $500 manganese which you have would make a whole lot better steel than $100 manganese that you do not have, and when there is any necessity for this increase of production the price should be such as to bring it out, although it is better to develop to the limit the more cheaply mined operations.

Mr. SMITH. And with the somewhat limited supply of mine labor, which may become more limited as the months pass, of course, we may get out fewer pounds of copper by putting the price so high as to make the operation of the very small mine attractive. From the table submitted it will be seen that 2,606,000 days of labor in the least efficient mines yielded 100,000,000 pounds of copper, while 2,330,000 days of labor in 8 of the largest mines produced 747,000,000 pounds of copper.

Mr. CALLBREATH. If the operation of the expensive mine is going to take from the equipment of the cheaper operation, then I would say you are right.

Mr. SMITH. And not only man power, but also in mechanical equipment, there might be the same essential?

Mr. CALLBREATH. Yes; that is true.

Mr. SMITH. The fact is that in the small mines more than one-third were below 50 pounds per man, whereas four of the big mines were above 300 pounds per man per day.

Mr. CALLBREATH. If in the operation of these high-cost mines development work is leading to the cheaper cost and larger ore bodies, it might be important that the work should be continued. The big mines which are now producing 300 pounds per man at one time in their existence did not produce 50 pounds per man.

Mr. SMITH. That was in the development stage.

Mr. CALLBREATH. Yes; that was in the development stage, and these others are in the development stage, and if the big producers

are reaching the point of exhaustion, and if the demand for copper is going to continue for many years, it may be desirable that these other mines shall continue to operate through this development stage to replace the exhausted mines when they shall quit production.

Mr. SMITH. But for the period of the war, even if the war is continued for several years, these big mines are not approaching the exhaustion stage.

Mr. CALLBREATH. I take it they are not.

Mr. SMITH. Returning, again, to that matter of operating the idle mines or developing new mines on properties that are extremely promising in some of these metals of which we have altogether an insufficient supply, is it not possible, Mr. Callbreath, that there may be here and there some properties where the disinclination to operate is not willful interference with war preparations but is simply the act of ultraconservative capital?

Mr. CALLBREATH. That might be; but it is probable that a proper price would do away with that ultraconservatism, and that the operation of that property under the direction of the man who furnished the capital would be very much more effective and efficient than if it should be operated under governmental direction. In fact, my belief is that the best results will always be obtained under the direction of a man who is personally responsible for his acts and knows he must act efficiently; that he must coordinate every productive part of his plant in order to make a profit; and that if he is going to operate without reference to whether the thing pays or not, the expense is going to get to a point where it would not be wise for the Government to enter into it.

Mr. SMITH. Some months ago there was actually one case that came to us in the Government service for assistance, where the owners of the property, who had inherited the property, were unwilling to even give a lease for its development, and at that time we were pretty hard pressed to think of any way to actually put the pressure upon those conservative heirs who were not interested in securing an income from their property. With such protection as is afforded in this bill we could have put the pressure on and I think it would have resulted in their giving a lease without any necessity for Government operation. In other words, the gun would have been loaded and the coon would have come down.

Mr. CALLBREATH. That creates a condition that it might be wise to meet; but we must remember that we are likely, by establishing a principle of that kind, to create a disturbing condition elsewhere. I read a day or two ago a clipping from the Binghampton Press to the effect that one-half of the world is continually kept busy in correcting the mistakes of the other half. I doubt the wisdom of the Government entering into the actual operation of a mine except under the direst extremity.

Mr. SMITH. Should we not at this time provide for the direst extremity?

Mr. CALLBREATH. Not if it can be provided for in a different way. If we can get our production without resorting to this means, I am in favor of the first method.

Mr. MACBETH. I would like to return to the licensing system with Mr. Callbreath. Mr. Callbreath, say that I am the owner of a mine and you have the amount of capital that I require for development

and operation of that property. The mine contains mineral that is required for war purposes, a product which under this bill is to be stimulated. I ask you for the money to put into this property. You examine the property and find that it is one of merit. Then I mention to you the provisions of the licensing system and inform you that prior to my entering into the development of this property and the production of ore, I am compelled to take out a license under a certain regulation, and that if I do not conform strictly to the regulations under this license, according to the judgment or opinion of some Government agent, who may not have knowledge of the property and who may not know how to operate the property as I do, that my property will be seized and taken over by the Government, and that if I continue further in that operation of the property, I will be subjected to a fine not exceeding $5,000 and imprisonment for more than two years; that I must continue my milling system, and the operation of my property in accordance with the view of some Government agent. Would you be inclined to furnish me with money for the operation of that property?

Mr. CALLBREATH. If the licensing feature contained provisions such as you outlined, certainly I would not.

Mr. MACBETH. If you will read that section you will find out that that is the case.

Mr. CALLBREATH. I doubt whether any licensing provision would be as drastic as you have outlined.

Mr. MACBETH. I suggest that you read the section.

Mr. WHITE. There is one other feature of the licensing situation. This bill contemplates primarily Government assistance in one way or another. If the plant, in order to maintain its operation, requires Government financial assistance—I am assuming now that it will be through a contract or at the minimum price as guaranteed—it is given financial assistance because the operation of the concern is necessary for the military requirements of the country or for the purpose of meeting the necessities of the country. If the Government is really a financial factor in that concern, there is some justification for a certain amount of control. Now is there not some justification, where the Government really becomes a financial partner in the concern, for exercising a certain amount of control to protect its own interests through the licensing system?

You must take into consideration the question of extreme powers that may be exercised. I will grant that there are some rather extreme powers that could probably be exercised; but, at the same time, it is not necessary to anticipate that all of those powers are going to be exercised; but it does represent a safeguard to the Government and on the part of the Government, because of the fact that they are entering into it to the extent of $50,000,000 or $10,000,000—whatever this bill may carry. As the new mines are not necessarily going to be permanent unless they have some assistance, the section seems to me to be justifiable, reasonable, and defensible under the circumstances.

Mr. DAY. Mr. Chairman, I would like to ask Mr. White a question.

The CHAIRMAN. Very well.

Mr. DAY. Referring to the section authorizing the seizure of idle mines, plants, and mining property, I wish to ask Mr. White if there is

anything within the whole range of the external pawers, which has been asked and granted to the Government in a war crisis which approaches this in its sweep? In orther words, while the farmers' products have to some extent been commandeered, and their prices fixed, has any attempt been made to seize, by the authorized powers, the farmers' farming land and dictate his methods of raising crops of grain on the land, as to the crops that should be put on the land or anything of that sort, which could be considered as parallel to the proposition here?

Mr. WHITE. A situation even more parallel than that is the fact that the President and the War Department have been authorized to commandeer any plant, or even mine, which may be required directly for military purposes. That power does not extend to meet all possible emergencies, because many of the things with which we are dealing in this bill are important to essential industries, whose products are not directly used by the military authorities, and consequently that power would probably not be exercised. But I should say that the power which the military authorities had to commandeer any essential plant for their operation, is exactly parallel to this proposition, and the justification is the same in both cases, except that here we are dealing with certain secondary commodities that are just as important. The Government can now commandeer sulphuric acid plants, if it wants to. The argument here is to secure the raw material, either of pyrite or of sulphur, and it might be necessary to go back and take over the pyrite or the sulphur mines. But this power is limited by this bill to idle or insufficiently operated property. If we assume that the concern is doing its best, it would not be touched. There are a number of illustrations of this. Here, for instance, is a man who is holding up 40,000 acres of good manganese prospects. He holds it for its timber value and he refuses to let anyone come in and operate it as a mining property. He will not let anybody lease it. There you are cutting out a possibly productive area of 40,000 or 50,000 acres of good territory well located. What are we going to do in that situation? Must a man's individual attitude or feeling stand in the way of the possible supply of an essential material?

The CHAIRMAN. Do you know of any such case as that?

Mr. WHITE. The case I have cited is an actual one, and close to that same locality is about 30,000 acres more which the owner is holding up for a 25 per cent royalty. That means at least from ten to twelve dollars a ton as compared with the dollar a couple of years ago.

Now, there are a number of other properties that it would be to the advantage of the owners to have operated. They never again can expect the price that they are offered for the manganese to-day. No man who owns a manganese property, if he sees his own interests properly is justified in holding back that property at the present time.

The CHAIRMAN. Then your idea is that where good properties are in litigation, the Government could take over those properties and operate them, and that the litigation would not apply to the properties but to the money?

Mr. WHITE. To the money which the Government would hold in trust until the matter was settled up. In the meantime the Government would operate the properties. The Government would open up the property, and would operate or permit others to operate it under a proper permit, and a sufficient amount of money would be reserved for a proper settlement of the dispute between the litigants. The land will be taken to develop the mineral rights and the property ultimately returned to the owner with just compensation for any ore that might be taken out, or any damage that might be done.

The bill, in its farthest analysis, goes one step further as it is now worded, and applies to insufficiently developed property. I do not believe the producers are expressing any fear of this section. The people who own the property would welcome in most cases such power as this bill gives, for, as I said, this is the time when they can get the highest price for the product of their land that there is any reasonable expectation of their ever getting. I know of at least two properties which are inefficiently operated and which for financial reasons, litigation reasons or other reasons, are not getting nearly as large an output as they could under other circumstances. I believe in both cases the expressed attitude of the people controlling the properties would be hostile in such an emergency to any such proposition as this.

Dr. SMITH. May I add to Mr. White's answer that I understand the war emergency provision of this bill is not really more radical than the law which has been enforced in Australia on a peace basis for many years—that is, that all idle mineral properties should be operated if there is public need, and that the State has a right to administer these properties for the benefit of the owner, as well as for the good of the State, the owner receiving his interest in the returns from the property, but also securing the public interest in the operation. When I say this to Mr. Day I think I probably have as strong a belief in private property rights as he has, but I believe that we must recognize the larger social rights of the country, just as those rights have been recognized in times of peace in Australia.

Mr. DAY. I might say, Mr. Chairman, that I hardly think Mr. White's reply answered the point I was endeavoring to bring out. The bill, it seems to me, is modeled after the Lever food-control bill, especially in the licensing and price-fixing features of the measure. Personally, I regard this provision for seizure and operation of idle plants and properties as the most dangerous, revolutionary, and despotic provision contained in the bill.

The President, it is true, is the Commander in Chief of the Army and Navy and has power to do what he thinks is best, but the point I want to bring out is that it has not so far been suggested in regard to agricultural products.

Dr. Smith has referred to the Australian proposition, which is exactly an admission of what I am trying to bring out, that this whole proposition is really progressive in its character and looks to the absorption and seizure of more power and more control and the application of more Prussian methods to our industries that are already highly efficient, highly organized, and very successfully supporting the Government in every particular; but still these gigantic

powers are asked for in larger measure. Therefore, I can see great danger in that provision. If we were to have that administered by a board or a commission of what we might call practical mining men, I would see less danger, but I see, in an administration 3,000 miles away, practically, from the holdings referred to, under bureaucratic control and methods, a great danger to the interests of the citizen, and, far more than that, a great danger to the country. In other words, it is my judgment that it is the way to lose the war, if such a thing is possible, rather than the way to win it.

Mr. WHITE. I may say, Mr. Chairman, that in all the communications which have come to us from the prospectors and the small operators, they have expressed almost universally a desire to turn their properties over to the Government, trusting in equitable reimbursement, if such a thing was necessary. The tendency, I believe, on the part of most of the people in this country is to have the Government take over the property. I wish to say that there is no established industry in manganese or pyrite. There is, to an extent, in pyrite. Manganese, however, is not well developed. The tendency, so far as we have seen, of the attitude of the small operator and prospector, apparently, is one of favoring the Government taking a more active interest in the property, or operating it, rather than opposing it. That has been the sentiment as it has come to us, rather than opposition as to the thought of the Government interfering with the property. I simply give that as an illustration.

Mr. DAY. I think that is true in this way, that the impression has gone out, or the statement has gone out, ostensibly officially, although it may not be official—the statement has been published and spread broadcast throughout the United States that the Government will advance money to prospectors and owners of small properties, in order that they might develop these properties. That was substantially the statement. I do not know the authority. That idea prevails in the West. I believe it is well settled that that is not correct: that it is a misunderstanding; that this bill does not contemplate the advancement of money or partnership by the Government in the opening and developing of mines or prospects of any character.

Dr. SMITH. The statement has gone out from the Geological Survey over my signature, to hundreds of correspondents, that the Government was not intending to do that thing; and, as far as I know, no official statement has gone out of the nature referred to by Mr. Day.

May I simply add, with regard to the question of governmental control of idle properties, that some 10 years ago, at a public meeting in your State, Mr. Chairman, a mining engineer of wide experience through the West, in no wise connected with any bureau of the Government, summed up the proposition of idle mining properties in these words: "Dig or get off the claim." I think that is a general-welfare proposition that does not savor of beaurocratic desire for added authority.

Senator SHAFROTH. Mr. Callbreath is on the stand, as I understand it, and I want to ask some questions before he leaves.

The CHAIRMAN. Very well, Senator.

Senator SHAFROTH. Mr. Callbreath, have you expressed your opinion as to that feature of the bill relating to minimum prices, and also that which was stricken out by the House, in regard to the fixing of a maximum price?

Mr. CALLBREATH. I think I have; yes, sir.

Senator SHAFROTH. And as to the licensing system; have you expressed yourself on that?

Mr. CALLBREATH. Yes, sir.

Senator POINDEXTER. Mr. Chairman, here [indicating] is a letter that I would like to have go in the record in regard to the bill written by Mr. Folsom, of San Francisco, formerly of Spokane, Wash. He is a well-informed mining lawyer of some prominence on the Pacific coast, and I think his view is entitled to consideration by the committee.

The CHAIRMAN. I may state that I have a number of communications, and before we close the taking of testimony I think the committee might go over these letters and decide which ones should go into the record. The entire matter regarding correspondence will be considered.

Senator POINDEXTER. I have a great mass of letters, but this is the only one that I wanted to put in the record.

(Letter referred to is as follows:)

MAY 17, 1918.

Hon. MILES POINDEXTER,
*Senate Office Building, Washington, D. C.*

DEAR SENATOR POINDEXTER: There is a bill pending before the Senate which authorizes the President to spend $10,000,000 to stimulate the production of certain minerals needed for war purposes; among others, chrome. As the bill was introduced in the House it provided for an expenditure of $50,000,000 and authorized the President, through a representative, to fix the price at which these minerals would be purchased. This latter portion was stricken from the bill before it passed the House, and the amount to be expended was reduced from $50,000,000 to $10,000,000.

I am not personally interested in any of the minerals enumerated in the bill, but I do know that some of them, including chrome, are hard to get and are much needed.

Mr. Albert Burch, whom you may know, has been a voluntary representative of the Bureau of Mines, in searching for deposits of chrome, neglected his own business and went to Cuba in search of deposits and is now making an effort to stimulate the production of that mineral in California and Oregon. He has asked me to help him to impress Members of the Senate with the necessity of passing the bill in such form as will make it effective to secure the desired result.

Chromite ore is almost invariably found in small deposits. Mining of this mineral is confined principally to farmers, prospectors, storekeepers, and professional men. This is because the deposits are so small that they are not attractive to mining men with large capital. Frequently these small producers risk all that they have when they start in to open up ore bodies of absolutely unknown extent, some of which may prove to contain only 1 ton, while others may yield 500 tons. Those deposits nearest the railroads are for the most part already exhausted, and roads or trails must be built if the others are to be mined, and in addition to this some are of so low a grade as to require concentrating machinery to make them available for use. It takes time and money to build roads and trails, or even the smallest and simplest of concentrators, and before a comparatively poor man can begin on either he ought to know whether a few months hence he can be reasonably sure of getting his money back. This assurance can be given by a Government guaranty of a minimum price and in practically no other way. It may be argued that a man could protect himself by a long-time contract with the consumer; but even if one of these small producers could so much as get in touch with a war consumer, all of whom are in the East, he could not make a contract, because the nature of the ore is such that he can not tell within 1,000 per cent how much he can produce, and no consumer would make a one-sided agreement such as this uncertainty would entail. The result is that the small producer has been and is now at the mercy of the brokers and middlemen who have contracts with consumers at fair prices, which

they in turn fill by buying from the small producers at such prices as the poor man's necessities may dictate.

I respectfully ask you to give the pending bill your careful attention and do what you can to have it so amended that it will authorize the fixing by the President of a minimum price for a definite period.

With kind regards, I am,

Yours, very truly,

MYRON A. FOLSOM.

Mr. DAY. There was one item in regard to antimony that I asked to have leave to put in the record.

The CHAIRMAN. Yes; you can submit that for the record.

(Letters referred to appear in appendix.)

The CHAIRMAN. Mr. Macbeth, I believe you wanted to make a statement.

Mr. MACBETH. Yes, sir.

## STATEMENT OF MR. RAVENEL MACBETH.

Mr. MACBETH. Mr. Chairman, I live at Mackay, Idaho. I represent the Idaho Mining Association, an organization with over 1,200 members, about 1,100 of which are active mining operators in the State of Idaho and about 150 of which are active mining operators in the States of Oregon, Washington, Montana, and Utah. Mr. Stanly A. Easton, of Kellogg, is president of the organization; I am secretary-treasurer.

Recently, in discussing this bill with Mr. William Y. Westervelt, who is chairman of the war-minerals committee, I stated to him that I understood, from the testimony in the House, that the committee had worked on this bill since last July. I said to Mr. Westervelt that, in my opinion, any man with ordinary intelligence with a copy of the Lever bill before him, a pair of scissors, a paste pot, and the ability to write in a number of minerals, could have drafted that bill within three hours. Mr. Westervelt said, in reply to that, "You are making a caricature." I said, "I am not taking that position." I said, "Mr. Westervelt, when you were drafting a bill of this kind why didn't you take into consultation some of the prominent mining men of the West, the men who are engaged in actually digging out the metal and who probably could have given you some advice and some assistance that would have enabled you to draft a workable bill?" Not a man was consulted about this matter west of the Missouri River. If so, I have failed to ascertain that fact.

Mr. Hotchkiss, who is one of the members of the committee, upon being asked that question at my request by Mr. Welling, of the House committee, said, "No." The desire was not to make it sectional. In other words, a member of the Bureau of Mines, a member of the Geological Survey, a New York mining engineer, and the State geologilst of Wisconsin drafted this bill, presuming that they would have the knowledge that would suit the western mining conditions, a presumption which those who reside in the West object to.

Would you prefer that I go right ahead and go into the bill?

The CHAIRMAN. Make your statement in your own way, Mr. Macbeth.

Mr. MACBETH. Mr. Chairman, in section 1, line 11, of this bill occur the words "and chemical compounds thereof." Just ahead of

that are the words "the following-named mineral substances and ores, minerals, intermediate metallurgical products,"—

What that exactly means I do not know. It is something that can cover a very wide field. Then it goes on to say, "metals, alloys, and chemical compounds thereof." The bill then mentions antimony, arsenic, bismuth, bromine, cobalt, mercury, potassium, radium, sulphur, and so on. I do know that these and some others of these metals are used in the manufacture of chemical compounds, and those words take in the whole chemical industry of the United States; that is, the chemical industry is taken in within the scope of this bill. I do not believe the chemical men are aware of it; otherwise they would be here to protest against it. You have also taken in practically all the patent-medicine business by the words "chemical compounds."

Mr. Chairman, in this bill there are a number of minerals to-day of which we are producing a surplus and which can be increased in very large measure by the present stimulation given to war necessities, and the only excuse that I can see for their being in this bill is to give another man a job; that is all there is to it. It is to make further use of this $500,000. Why, for instance, is magnesite placed in this bill? Why is mercury placed in this bill? Why is arsenic placed in this bill? There are other minerals that I might mention. Every time you put in a new mineral you make a job for another board or man. As a mining engineer said to me, there would be a department for each metal or mineral, and that is about what there will be if you pass this bill in its present form.

Section 2 has nothing in it that I care to speak of. Neither has section 3.

Section 4 says that "it is hereby made unlawful for any person, except as otherwise provided by this act, wilfully to commit waste or wilfully to permit preventable deterioration of any necessaries."

Under that section, Mr. Chairman and gentlemen, every smelter, every concentrator, every refinery, in the United States could be controlled, because all of these plants wilfully waste some of the products mentioned in this bill. That section, if not stricken out altogether, should be so amended as to protect the major metals, which waste the by-products. Arsenic, for example, is a by-product. You have sulphur, and sulphur is going to waste. You have palladium, and palladium is a by-product obtained from refining of copper ores. How are you going to increase the output of palladium unless you increase the output of copper that is refined?

These gentlemen who are advocates of the bill may have some means of doing it. I do not know how they can do it without taking over control. This point, if I remember correctly, was brought to your attention the other day. Your attention was invited to it by Mr. Kelley of the Anaconda Co.

The licensing system in my opinion—the opinion of a man who has been engaged for over 20 years as a prospector and mining operator in the West and who has had occasion to ask financial assistance many times from men of means for the development of properties in which he was interested, and also to obtain money for other men, which I am doing from time to time—would absolutely prevent you from getting one dollar to carry on the provisions of this bill

and encourage the production of ores. That section should be changed, in my judgment, gentlemen, if you will permit me to say so, by striking out the word "mining." Let it apply to distributors, if you please, but leave out the word "mining."

The CHAIRMAN. Are you familiar with the nonferrous-metal industry act recently passed by the British Parliament and the statutory rules made by the board of trade?

Mr. MACBETH. No, sir; I am not.

The CHAIRMAN. That act was passed this year and is an act to restrict temporarily persons who may engage in business connected with certain nonferrous metals and metallic ores. It provides quite fully for licensing.

Mr. MACBETH. I am not familiar with it. I am speaking from the standpoint of practical mining.

Senator POINDEXTER. That only applies to Great Britain?

The CHAIRMAN. Yes.

Senator POINDEXTER. It does not apply to Canada or Australia?

The CHAIRMAN. There are some acts passed by the Dominion of Canada in regard to these ores. One is the zinc-bounties act; another is known as the mines-developing act; and still another as the ore purchasing and treatment act.

Senator POINDEXTER. Have you copies of those acts?

The CHAIRMAN. I have copies of the acts for the use of the committee.

Mr. MACBETH. Under this section, Mr. Chairman, the smelting industry in the United States is being attacked. Zinc ores run up to 25 per cent sulphur. We have a statement with regard to the fact that the zinc miners are not being paid for the sulphur content by zinc smelters having acid plants; they should be paid. This is restrictive, and the miners have discontinued shipping. The proponents of this bill should have gone into this case and an explanation should have been made to the committee, but it has not been done.

Section 7 of the bill relates to hoarding. I would say that the two sections, 6 and 7, are negligible. The only danger in this section, as I see it, is this, that you might submit the question of what constitutes hoarding to the judgment of someone who does not understand the business under consideration. That fact was brought out in the testimony of one of the witnesses for the steel corporation, who said that a year's supply of a certain ore was necessary. Now, some agent of the Government might say six months' supply was sufficient, and then the steel company would be considered as hoarding. That is what it means; that is what it amounts to.

Section 8 relates to the willful destruction of any necessaries for the purpose of enhancing the price or restricting the supply. I thoroughly approve of that.

Section 9 relates to the enhancement of the price of necessaries for the purpose of impeding the Government in carrying on the war. I thoroughly approve of that section.

Section 10 provides that the President is authorized from time to time, whenever in his judgment it may be required for the successful prosecution of the war, to requisition necessaries. When these necessaries are requisitioned and the owner of the necessaries fails to agree with the agent of the Government as to the value of the

necessaries, he is only paid 75 per cent and is then called upon to go into court. That, it seems to me, would work a hardship upon the ordinary individual, to make him go into court and fight the United States. In fact, he would not want to do it, especially in time of war. I would suggest, therefore, that there should be included a provision to this effect, that a disinterested board be appointed to determine the value of the property. I can not see how the owner of the property could object, and I can not see how the United States could object. Then you would not be making the owner of the property bring his case or his dispute into court. In condemnation proceedings and proceedings of a similar nature I think that is the way it is done. A board is provided for. Why should it not be handled in that way in this case?

The CHAIRMAN. You have reference to an arbitration board?

Mr. MACBETH. Yes, sir; instead of putting this heavy cost upon the owner of the necessaries.

Section 11 of the bill, Mr. Chairman, is another section that makes the bill unworkable. You enter into these contracts for a period not to exceed two years. You can not take the ordinary mine and get it in bearing or in production under eight months, and it may take a year. You are also confronted, at this particular time, with the difficulty of obtaining machinery and supplies. I hardly believe that a mine of any nature that would give you any amount of ore could, at this time, obtain the necessary machinery and supplies within a period of one year. Men managing very large properties have not been able to get supplies within a year. We will concede, however, the ordinary man could obtain supplies within a period of one year. We will say that I put $100,000 into a mining property. I am fully equipped. I am entitled to a return of the investment through one means or another. I can not cover that within one year and get back my money, for I am confronted with the excess-profits tax. It takes from me an amount that I desired as a return of principal. Now, who is going to take a chance on that within the period of two years? There should be a return of my capital within the period of two years, and a legitimate profit which must be through profits made on the ore. We will say that on a legitimate investment for two years of $100,000 the return should not be less than 40 per cent. I have then $140,000 with a capitalization of $100,000. The excess profits that I pay would be $85,000, and I therefore turn out loser, for, at the end of two years or at the end of my contract time it would not be possible for me, if I were operating a property in the West, to obtain such a profit from my ores as would give any further return on my principal.

Senator POINDEXTER. What allowance, if any, is made in the administration of the war revenue act for amortization of mines?

Mr. MACBETH. None at all, sir, for such mines. I would suggest that you exempt these mines during the period of the war emergency from the provisions of the war excess-profits tax.

Senator POINDEXTER. Do they calculate a straight tax upon the actual excess profits of a mine, regardless of the extent of the deposit or the life of the mine?

Mr. MACBETH. Absolutely. I spoke of an investment of $100,000. In that case I would have to take $140,000 as the profits, as against

$100,000 investment, and pay my income tax and war excess-profits tax on that $140,000.

The CHAIRMAN. Not only that, but I think you will find that in the different States they have their State taxes and what is known as the bullion tax.

Mr. MACBETH. Yes; and your ordinary State taxes.

Right there, if you do not increase the length of time and prevent the foreign importations, or if you do not provide exemptions, as a war emergency, for the minerals and metals which it is your purpose to include in this bill you can not get any money under that section to encourage the production of these ores. I would suggest strongly that that be done; that some measure looking to the release of these properties from the war excess-profits tax be included in here.

The CHAIRMAN. You refer specifically to metals and ores referred to in this bill?

Mr. MACBETH. Oh, yes, sir. I will go further and say that I would not take into account the income tax. I would make a man pay that tax, but I would only make the exemption apply to war excess-profits tax. It is well known that rare metals ore bodies are erratic and pockety. We will say that I buy property from a man to the amount of $10,000. I get a manganese deposit, which, on the surface, looks as it is might yield sufficiently to carry me through. I do make $6,000, we will say, or perhaps I make $10,000. I I make $10,000, the Government steps in and takes $5,500 away from me, and I have therefore lost $4,500 in my efforts to do the Government a service.

Senator SHAFROTH. How have you lost $4,500?

Mr. MACBETH. My property is exhausted. I have nothing more. That is true of many ores contained in the bill. Take, for instance, antimony, manganese, and tungsten. They are three of them. You can not tell until you have spent a great deal of money opening up the properties just what you have. Of course, the more you put in, the more you are going to lose.

Senator SHAFROTH. Suppose the mine is not exhausted after working for one year.

Mr. MACBETH. The point then is this, without some provision is made to prevent importation of mineral that will interfere with my mineral, I am just as bad off as if I had no mine. The price will go down at once.

Senator SHAFROTH. Do you think that we ought to provide for a longer period than two years for the fixing of prices?

Mr. MACBETH. Yes, sir; provide for a longer period than two years. You can not get capital on a two-year basis.

Senator SHAFROTH. How much longer would you suggest?

Mr. MACBETH. That would depend on the nature of the mineral, Senator, and how it occurs.

Senator SHAFROTH. That is in relation to the fixing of a minimum price.

Mr. MACBETH. The fixing of any price. You may fix a maximum price, a minimum price, or any kind of a price.

Senator SHAFROTH. What is your theory as to the best method of price fixing, whether there should be a minimum price, or a maximum price, or both?

Mr. MACBETH. I am against price fixing at any time. I believe, Senator, in the law of supply and demand, but under the provisions of this bill, as a war emergency measure, it may be necessary to offer a flat price to bring out the ore.

Senator SHAFROTH. You mean to fix a minimum price?

Mr. MACBETH. Yes, sir; but my idea is this:

I would say, "The Government wants 500,000 tons of manganese ore of a certain grade." Then I would advertise for it and I think you would get it.

Senator SHAFROTH. Then that would not put the miner to such a hazard.

Mr. MACBETH. No. He would know what he could make at it.

Senator SHAFROTH. And also, it would not put the Government to the disadvantage of incurring a liability which it does not know the extent of.

Mr. MACBETH. Absolutely.

Senator SHAFROTH. Then your theory is to have a large revolving fund, and the Government is to enter into contracts for the ores it wants, or the ores necessary to supply the market?

Mr. MACBETH. There is a question right there. Lead, zinc, and copper are being handled differently and in a very satisfactory manner. Take a concern like the Anaconda Copper Mining Co., producing manganese. We will say that you are controlling it. Now, why should the Anaconda pass it to the Gopernment and have the Government redistribute it to other people? Why not have the Anaconda Co. ship direct to the alloys committee of the steel manufacturers, for instance, and have that committee distribute to the steel manufacturers? It would not cost the Government a cent. Why should not that be done in the case of pyrites and sulphur required by the powder manufacturers? Why should the Government step in there as a broker for these people? Why shouldn't their association act?

Senator SHAFROTH. What kind of a contract would you make?

Mr. MACBETH. Under this bill the Government would have to take over the contract and tell these people, "We have bought so much manganese for you as a war-emergency proposition. It is our purpose to see that you obtain it, and it will be shipped from such and such a source, and you are called upon to pay so much for it." In that way you could do this.

Senator SHAFROTH. What kind of a contract would you make with the producer?

Mr. MACBETH. You would have to make it for longer than two years.

Senator SHAFROTH. Unless you put an exorbitant price on it?

Mr. MACBETH. Unless you made an exorbitant price to cover everything.

Senator SHAFROTH. What is your theory as to how we should proceed? For instance, take manganese.

Mr. MACBETH. I would say, advertise in the different papers of the country that the Government wants 500,000 tons of a certain grade. I believe you would get it.

Senator SHAFROTH. Would you ask for bids in that same communication?

Mr. MACBETH. Yes, sir; I would ask for bids.

Senator SHAFROTH. Then, suppose that the lowest bidder can only furnish 10,000 tons. Would it be your theory to readvertise for the balance or take the next lowest bidder?

Mr. MACBETH. You would have to take them up. There would be different bids from different States.

Senator SHAFROTH. You would have to go down and take the lowest and then the next lowest?

Mr. MACBETH. Yes; for the full amount.

Senator SHAFROTH. After you had those contracts, what would you do in the way of allocating and making other contracts for the delivery of them?

Mr. MACBETH. The steel people, or the steel manufacturers, as the evidence shows, use something more than 90 per cent of the manganese. I would turn it over to them.

Senator SHAFROTH. Suppose they say that they do not want to pay this price?

Mr. MACBETH. Under this bill you say that they shall pay the price. You are doing it anyhow. You are taking the entire situation over.

The CHAIRMAN. Where would they get the manganese that they need if they did not take this?

Mr. MACBETH. That is the point. You could commandeer their works and go ahead. You could shut off the Brazilian ore. I think you could prevent the shipments on the railroads. They would come to time. They came to time in the West on shipments of copper and lead.

Senator SHAFROTH. Is it a fact that while we sell our copper to either the United States or the allies at 23½ cents, England has been paying 30 cents a pound for Canadian copper?

Mr. MACBETH. That is a statement made by Mr. Kelley, of the Anaconda Copper Mining Co., who is far better posted than I am. I know he has been objecting to that for some months.

The CHAIRMAN. Do you know the extent of that?

Mr. MACBETH. No, sir; I do not. The same condition exists with Australian copper, but very little has gone over.

Senator SHAFROTH. At 30 cents?

Mr. MACBETH. Yes, sir.

When this question of silver came up at the meeting that we held in Spokane over what we should do to meet the Government's necessity for silver, we had fairly agreed to put a fair price on silver, a price that we though would assist the Government and assist our allies. The president of the British Columbia Mine Owners' Association came to Spokane. As I appeared rather prominently in the newspapers at that time, he called upon me and protested against any price fixing on silver. He said, "You Americans can go ahead and sell silver for $1 an ounce, but we are going to hold out and get the $1.50 for ours." These men did hold out and the chances are that they will get that $1.50.

Senator SHAFROTH. I do not think that, because I believe that whenever you put silver above the ratio that a great many of the nations have, you make gold the cheaper metal, and consequently relieve that demand on silver.

Mr. MACBETH. But I am speaking of silver used in the arts?

Senator SHAFROTH. No; I am not. I can not conceive of silver going any higher than $1.32 an ounce, which is the ratio of the Latin union.

Mr. WHITE. Mr. Macbeth, what system of penalizing, if any, would you enforce against the producer if he failed to fulfill his contract?

Mr. MACBETH. You would have his bond. Just enter a contract with him. The Government is contracting every day, day after day, for enormous amounts. Why not contract for $25,000,000 or $30,000,000 worth of manganese?

Mr. WHITE. For example, here is a man located in Nevada who has a small deposit which is not thoroughly drilled. There may be ten or twenty thousand tons in that deposit. The man might make a contract. I believe you are familiar with the fact that it is almost impossible to estimate the size of the deposits. It is not like copper or the larger mineral deposits. We would say that a man wants to do a certain amount of business and that he is properly located. The Government advertises for 500,000 tons. If he makes a contract for 20,000 tons and does not fulfill it, it is true that he would be subject to a penalty, but at the same time the Government has failed to get its part of the 500,000 tons. My point is that it is almost impossible for the Government to advertise for bids for the exact amount which it might need and get it from these uncertain deposits. There is nothing assured about it. We do not care so much for the bond, but it is a question of not getting the mineral. The Government has got to have it.

Mr. MACBETH. Advertise for a million tons, then.

Mr. WHITE. Under the contract system, with the uncertainty of the deposits, you are not going to be able to restrict the liability of the Government to purchasing this exact 500,000 tons. You will probably have to bid for two or three times that much.

Mr. MACBETH. That is a question that goes to the man who administers the act.

Mr. WHITE. Is there anything that will more quickly discourage the producer than to have to put up a bond?

Senator SHAFROTH. Could not the Government fix the bond in a sum which would show good faith, not making it such a large amount as to discourage him?

Mr. WHITE. Under this bill the obligation would have to be pretty nearly all on the part of the Government, no matter what the system was. It would not be good business or proper practice to hold up the producer very stringently in the matter of fulfilling his part of the contract, because of the uncertainty connected with it.

Senator SHAFROTH. Mr. White, suppose you had a blanket statement to the effect that you would give so much a unit for manganese, and suppose they should produce one hundred times more than that. You can see what a hole the Government would be in.

Mr. WHITE. But Mr. Macbeth has expressed the opinion that in the two years' period there would not be any possibility of doing that. As I understand his point it is that there would not be an increased production to that extent.

Senator SHAFROTH. That is speculative; you can not tell. You might open up a mine that would be a wonder.

Mr. WHITE. The liability, Senator, can not be fixed and definite. We hope, in other words, that we will get more than the supply re-

quired rather than less. It is better to err on the side of getting more rather than not getting enough. The supposition under this bill was that the two-year period was to prevent too much overproduction. There was no anticipation that such a condition would occur. I do not think that enough mines are under development, plus certain new ones, to give you an overproduction. To-day the new miner has no guaranty. If you give him a two-year guaranty is not that better than no guaranty?

Senator SHAFROTH. I can see the great difficulty. However, is not the liability of the Government curbed more directly, even if it makes contracts for double the amount which it needs, than it is under a general guaranty permitting the production in two years' time of several times as much as it needs?

Mr. WHITE. The bill gives the right, or leaves it to the discretion of the administrator, to use the contract system or use a guaranteed price. Both methods are provided, as the bill now stands. They can be used in combination or separately.

Dr. SMITH. Mr. Chairman, may I ask a few questions in order to clear this up?

The CHAIRMAN. Yes.

Dr. SMITH. Mr. Macbeth you understand, do you, that I am supporting this legislation?

Mr. MACBETH. It came out of your department, Doctor. That is, one of your members, or a member of your department, is on that War Minerals Committee.

Dr. SMITH. May I ask you whether you understand that I am supporting this legislation?

Mr. MACBETH. I naturally do.

Dr. SMITH. In your opinion the proponents of the bill desire to provide more jobs. Do you include the Director of the Geological Survey in that, as actuated in any degree by that purpose in his support of this bill?

Mr. MACBETH. Well, Mr. Director, you are one of the proponents of the bill. I am presenting my opinion of the bill. My opinion of the bill is that the bureaucrats in Washington desire to obtain increased control of the mining industry of the West.

Dr. SMITH. And your statement was that it was planned to provide more jobs?

Mr. MACBETH. It provides more jobs.

Dr. SMITH. That is the purpose?

Mr. MACBETH. That is the purpose.

Dr. SMITH. I wish, Mr. Chairman, to enter an absolute denial of the statement that has been made.

The CHAIRMAN. I think we will adjourn until 10 o'clock in the morning. You may resume then, Mr. Macbeth.

(Thereupon, at 12 o'clock m. the committee adjourned until to-morrow, Tuesday, May 28, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

TUESDAY, MAY 28, 1918.

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met pursuant to adjournment at 10 o'clock a. m.

Present: Senators Charles B. Henderson (chairman), presiding, and Poindexter and Baird.

Also, George Otis Smith, Esq., Director Geological Survey; Hon. Van. H. Manning, Director Bureau of Mines; and Messrs. White and Mudd.

The CHAIRMAN. Mr. Macbeth, will you continue with your statement?

Mr. MACBETH. Yes.

## STATEMENT OF RAVENEL MACBETH—Resumed.

Mr. MACBETH. Mr. Chairman, I first desire to ask Dr. Smith a question. Dr. Smith, granting that you are entirely sincere in your indorsement of this bill, would not the effect of its enactment, however, greatly increase your force?

Dr. SMITH. In answer to Mr. Macbeth's question, I have regarded that the principal advantage accruing to the Geological Survey and to its work under this proposed legislation would be that a larger use would be made of the facts already a matter of record in the service; our work would not be so much increased in amount as increased in usefulness.

Mr. MACBETH. Dr. Smith, that does not reply to my question as to the increase in your force. Does it increase the number of men employed?

Dr. SMITH. I do not anticipate that it would necessarily increase our force. In making that statement, Mr. Chairman, I wish to emphasize the fact that my support of the bill is a support of its principles, and would be the same whether the proposal in this legislation was to have this mineral control administered by the War Department, by the Department of Commerce, by the War Industries Board, or by any other Government agency. The fact of the necessity of control is the compelling fact, in my mind. How that control is exercised, by whom, and so on, I may have my own preferences; but those are altogether subordinate to the main question of the need of Government control.

Mr. MACBETH. Mr. Chairman, I wish to continue with section 11; that is in relation to the excess-profits tax. I wish to state that there are 140 cases now pending before the advisory board of the Treasury

Department for adjudication with respect to the amount of excess-profits tax to be paid by the small zinc operators who have been operating short-lived zinc mines in what is known as the Joplin district. The owners of those mines had no knowledge that we were to have an excess-profits tax. They developed their properties and put money in them in good faith. To develop one of these properties and construct a mill costs from $30,000 to $75,000, which they expect to have returned with profit of at least 40 per cent within two or three years. The result was that these men were called upon to pay to the Government an amount in excess-profits tax that showed a loss on their invested capital. That would refer to your contracts in section 11 not exceeding two years. I take it that the condition with respect to certain minerals included within the provisions of this bill are similar to the short-lived zinc mines in the Joplin district.

My knowledge of this matter is due to my having been selected at a conference of about 150 men from all over the United States, a conference that was held in Washington last December, representing the coal, iron, oil, and gas wells, and the metal industry, to represent before the Advisory Board the metal industry of the United States. I therefore had exact knowledge of this situation. We labored for two months before the Advisory Board, and the one question that we could not settle was that of the short-lived zinc mines in the Joplin district, and that question is still open, and those mines are still seeking relief from the Advisory Board.

In many cases these men had put the money that they had obtained from their properties back into the ground and into other properties. They can not borrow money from banks, and therefore they are ruined.

The CHAIRMAN. Don't you think, Mr. Macbeth, that in case an amendment to this bill of this kind was made it would be well to leave it to the President to make an order relieving or exempting any one or more of the producers and owners of properties mentioned in this bill from the war excess-profits tax, instead of passing a direct law exempting all of them?

Mr. MACBETH. Well, Mr. Chairman, I believe that would leave the matter in a state of uncertainty.

The CHAIRMAN. If none of the minerals in this bill were interfered with or touched at all, and no control or administration exercised over them, they would follow the course they have always followed, but wherever the Government exercises this power then the order of the President could relieve them from the war excess-profits tax.

Mr. MACBETH. Mr. Chairman, you would leave the matter in the discretion of the President as to whether or not the excess-profits tax should apply?

The CHAIRMAN. In all justifiable cases.

Mr. MACBETH. Then it is not in the President's discretion. It does not mean the President. It means the judgment of some one appointed by the President. The case would never come to the President except through some Member of Congress representing the district in which the property is located.

The CHAIRMAN. For instance, the bill would become law and no power whatever would be exercised under it after the passage of the law because conditions did not justify using the power.

Mr. MACBETH. It would certainly be a step in the right direction, Mr. Chairman. It might relieve the condition.

The CHAIRMAN. It would allow the use of that power wherever there was justification for such use.

Mr. MACBETH. I take it that the idea is to encourage production. Anything along those lines, of course, would be of assistance. Under this act as it stands you deter production; you absolutely prevent production; that is, under that provision not exceeding two years.

The CHAIRMAN. I might state that I have had this matter in mind for some time, even before these hearings began, and I have here a rough draft of a certain amendment to this bill for the consideration of this committee. It would provide partly as follows:

The President may, by an order to that effect, relieve or exempt any one or more of the producers and owners of any one or more of the necessaries from any and all of the provisions of the statute relating to excess-profits tax, etc.

Then it goes on to provide for the power to be placed in the President.

Mr. MACBETH. That might be very excellent, Mr. Chairman.

Permit me, Mr. Chairman, while we are on this subject, to read a statement made by Mr. Leith before the House committee with reference to this same question. Prof. Leith takes the stand precisely that I took yesterday. This appears on page 43 of the House hearings. He says:

It is going to be necessary to open up some deposits which will not be profitable under ordinary conditions and which presumably will be closed in a year after the war closes. If from the start the property has to pay a large percentage of these profits over and above its capital as an excess profit, it makes it necessary to get the capital running a very short time after the mine will be in operation.

Mr. Baruch, on page 32 of the same hearings, states this. The chairman asked Mr. Baruch:

Is it your idea that this price should be guaranteed after the war?

Mr. Baruch replied:

Only for the length of time that would permit him to get his investment back. I think he is entitled to get his investment back from a hazardous venture.

That is precisely along the lines that I have suggested.

Dr. William H. Nichols, chairman of the board of the General Chemical Co., who appeared before the House committee, took a similar position. He says:

I take it that this bill does not provide that situation, but it simply provides that the Government will protect those who will produce at this time to the extent of their expenditure the money which they have had involved.

Mr. Chairman, this bill does not do so. It is that which we would desire to have done. That, I believe, finished all I desire to say about section 11.

One of the provisions of section 12, in my opinion, should be stricken out. That is this:

Insufficiently developed or operated, or idle mineral land or deposit, mine, smelter, or plant, etc.

Mr. Chairman, there are but a few mills and smelters in the United States that would come under the provisions of this act,

providing that these gentlemen who are responsible for the act are sincere in their statements that they only desire to have certain minerals included within the scope of this act.

Under section 12 one could say that an "insufficiently developed or operated or idle mineral land, deposit, mine, smelter, or plant" would be a smelter or plant that was not sufficiently producing certain minerals mentioned in this act.

Now, we take that stand. We are assured by the best legal talent in the United States that we are correct in our views. It is an open question.

If you will include as an amendment to section 12 an amendment similar to that which I suggested for a preceding section, excluding all smelters and plants that are producing the major metals, and not including by-products of such plants, I think that will cover the situation. I believe there is an amendment that was suggested by Dr. Ingalls that would relieve the situation. Personally, I think it should all be stricken out. In my mind, if you want to get these minerals, we should make this as simple as possible. Do not place red tape and restrictions around it. You will not get anywhere if you do that.

Mr. BASTIN. How would you touch arsenic or bismuth?

Mr. MACBETH. If you wish to take in the Anaconda plant because there is a possibility of producing bismuth there, and you step in and say to Mr. Kelley, "You are not running your property properly; we are going to step in and take command," all well and good, if that is the purpose of the act. We know from the intimations in the House hearings that such is the case.

Dr. SMITH. Do you think that is the purpose of the act?

Mr. MACBETH. I will go into that after a while, Dr. Smith.

This entire matter is so singular to us that we can not understand, if you are sincere, why you presented a bill to the House, after months of study, which would have permitted taking over every article of commerce in the United States, according to the judgment of the House committee. I believe you will find it so stated.

Mr. WHITE. In order to provide for an increased output of arsenic, or the construction of a plant necessary to recover arsenic, which would be used in connection with the smelter, how would you make provision in this bill for the stimulation of production of arsenic? What method would you suggest?

Mr. MACBETH. Enter into a contract. I believe I can assure you that the Anaconda Mining Co. would enter into a contract immediately for your arsenic, if you offered a price for it.

Mr. WHITE. In case some smelter producing arsenic or antimonial lead should refuse to make such an addition to their plant, what would you do?

Mr. MACBETH. Mr. White, I have too high a belief in the patriotism of the American people to consider that there is any citizen in this hour of stress who would refuse to enter into a contract.

Mr. WHITE. Then there is no need to fear this clause.

Mr. MACBETH. That brings us back to the original situation, which is that this bill is an effort to take over and control the large properties of the United States. I think Mr. White's statement shows that it is the desire of the officials of the Government to get a foothold on the mining industry.

Mr. WHITE. I do not understand where you get that interpretation of that statement. It is a case of final emergency. Presumably section 12 is a last-resort clause, rather than a first resort, which your last statement would imply.

Mr. MACBETH. There is nothing in section 13 that I care to speak of, Mr. Chairman, except that two-year period, which you covered a few minutes ago by calling attention to the amendment which you suggested.

There is nothing in section 14 to which I believe we would offer any objection, Mr. Chairman.

As to section 15, I would strongly indorse that.

Section 16 raises a question as to whether you wish to expend a large sum of money at this time when the taxpayers of the country are to be called upon, you may say, for their last cent to assist in the carrying on of the war, or whether you desire to conduct this act in the most economical manner. The sum of $500,000 under the system which I presented to this committee yesterday is entirely too much. One hundred thousand dollars would be a large sum of money to carry out the provisions of this act under the system of going into the market and asking for contracts on such metals that you need.

You contemplate, under this bill, building up a system of warehouses throughout the country with a large force of clerks stationed at each. Under the system that I suggest you would have shipments made direct to the manufacturer from the producer, and such shipments would be made under the instructions of the administrator of this act, precisely as to-day we are shipping copper, lead, and zinc to the manufacturers direct. You could do it here under this system that I have mentioned and cut that sum down to $100,000 very easily. I think that would be a large sum of money. I think, in fact, $50,000 would be adequate.

Mr. BASTIN. If there were a temporary overproduction he would have to have storage.

Mr. MACBETH. You could have storage arranged for at these large concerns. Don't you imagine that the Steel Corporation, the Bethlehem Co., the Midvale Co., and others are in a position to take care of the surplus manganese? Don't you imagine that the du Pont people and the Hercules people are in a position to take care of the sulphur that might be shipped in excess of the normal requirements?

Mr. BASTIN. If you decide in advance that you want to go to those places.

Mr. MACBETH. Those are the people that will use the manganese and sulphur.

The next question is that of salary. The maximum salary that is paid is $4,500 for scientific and technological men. The salary, Mr. Chairman, is inadequate in these days. You can not get the right men for $4,500. You are going to require one or two very high-class men. You can not obtain them for $4,500, because their services would be used elsewhere at a greater salary. You can get men for that price, yes—$3,000 and $2,500—but not the right kind of men.

With reference to this expenditure of $10,000,000, that would depend upon the method of obtaining this metal that is to be used in this work. If you intend to go ahead under this cumbersome act

your $10,000,000 will not be a drop in the bucket. I would say that of your $50,000,000 also. You would require more money, but if you intend to adopt a business-like method, and I believe you will, as business, and go into the market and enter into contracts for such metals and minerals as you desire, $25,000,000 would be a large sum of money to cover everything. I do not think you would need that much, but perhaps it would be a good idea to appropriate that much. But if you are going into this act as it stands and buy this stuff for the Government and pay for it and store it, I do not know where you will land. Your $50,000,000 will not place you anywhere.

There is nothing further in the bill that I wish to speak of, except that I would like to return to section 1.

Under a recent decision in the United States—I have forgotten which one—but it is in the case of some bullion shipped into this country from Mexico, they defined copper matte as an intermediate metallurgical product. You are probably aware of that. Do you intend, when you place the word "intermediate metallurgical products" in the bill, to control copper matte and lead bullion? Lead, prior to being refined, is an intermediate product. Copper matte is an intermediate product. Do you intend to control those products?

Dr. SMITH. Mr. Macbeth should go down one line further and find the word "thereof."

Mr. MACBETH. Yes; but you have in this bill, as I understand it, taken control under your waste system of these properties. Does that follow the other portion of it as copper products, not refined, carry palladium and lead bullion carries antimony?

Dr. SMITH. If I may express my personal opinion, there is no such purpose as has been built up here.

Mr. MACBETH. I say to you, as Mr. Kelley, of the Anaconda Copper Mining Co. said, why don't you say it in the bill? Why do you leave it open? That is all we are asking. We want it closed up. You want to leave it open, probably, for court interpretation.

Dr. SMITH. There is no purpose of having a court interpretation.

Mr. MACBETH. Then make the bill so read. That is all we ask. Why do you present a bill which does leave it open?

The CHAIRMAN. In what way does it leave it open?

Mr. MACBETH. It says, "That it is hereby made unlawful for any purpose, except as otherwise provided by this act, willfully to commit waste or willfully to permit preventable deterioration of any necessaries."

The CHAIRMAN. That refers to the rare metals and ores specifically enumerated in the bill, does it not?

Mr. MACBETH. Yes; but under that you can take charge of a plant that is wasting sulphur, arsenic, and antimony in its smoke fumes. That is the opinion given by the best attorneys in the United States.

The CHAIRMAN. That comes back to your former statement as to the provision allowing this administrator, or whoever would administer the bill, to take over smelters?

Mr. MACBETH. Yes. Now, the association that I represent includes the Northport Smelter at Northport, Wash.; the Anaconda at Anaconda, Mont.; the Bunker Hill & Sullivan at Kellogg, Idaho; the United States Smelter in Utah; the International Smelter in Utah; and the American Smelting & Refining Co. in Utah. I am

asking for the protection of these smelters as against the provisions of this act. I am asking for protection for an investment representing hundreds of millions of dollars and tens of thousands of stockholders throughout the United States. These gentlemen say that they do not desire to place their hands on these properties. Mr. Chairman, and gentlemen of the committee, we request respectfully that this bill be so amended that it will not be possible.

Mr. MUDD. Has the Idaho Mining Association passed resolutions regarding this bill?

Mr. MACBETH. Yes, sir.

Mr. MUDD. Have you introduced that into the record?

Mr. MACBETH. No; we have not. It will be introduced.

Mr. MUDD. Does it condemn the bill?

Mr. MACBETH. It is absolutely against the bill altogether.

Mr. MUDD. Was the whole thing passed as an official resolution of the Mining Association?

Mr. MACBETH. Of the executive committee.

Mr. MUDD. Was it a referendum vote? Was it referred to the members?

Mr. MACBETH. We are scattered over too wide an expanse of territory to take up that question.

Mr. MUDD. Who is on the committee?

Mr. MACBETH. Mr. J. B. Eldridge, of Boise; Mr. I. E. Rockwell, of Bellevue; Mr. H. L. Day, of Wallace; and Mr. A. J. Van Eman.

Mr. MUDD. Are those men connected with the lead smelters?

Mr. MACBETH. One.

Mr. MUDD. Mr. Day is the only one?

Mr. MACBETH. Yes, sir; Mr. Day.

Mr. BASTIN. May I ask a question, Mr. Chairman?

The CHAIRMAN. Yes.

Mr. BASTIN. Do you think, Mr. Macbeth, that the refusal of the smelter to utilize its sulphur fumes at a financial loss, would be construed by any court or by any government board as willful waste?

Mr. MACBETH. That leaves the question open, Mr. Bastin.

I will tell you now upon what we base our views. I will state it frankly and lay my cards on the table. We feel that you are not sincere in this bill. You attempted last fall to control and take over all the mining properties of the United States, iron and everything else. A bill was drawn by the war minerals committee, which was never presented, and which had for its purpose the taking over of the mineral properties of the United States. I obtained knowledge of the bill early last January. I called at the office of Director Manning and secured copies of the bill which I sent to the western country, with the result that on January 24, in the city of Denver, Colo., there was called a meeting of 100 representative mining men from 10 western mining States. At that meeting this resolution was adopted:

RESOLUTION.

Whereas there has been advocated by the war minerals committee legislation looking to administrative control of all mineral production; and

Whereas this conference while declaring itself as unreservedly absolutely and whole heartedly behind the administration in all efforts designed to bring the war to a successful conclusion, believes that the production of the copper mines is adequate, of the lead mines more than adequate, and of the zinc

mines far in excess of current demands, and that there is no need to anticipate any marked changes in these conditions for several years to come, and that there exists by reason of these facts neither occasion nor justification for Government control or operation of these mines; and

Whereas on the other hand the supply of certain so-called rare metals and minerals, namely, molybdenum, manganese, chromium, pyrites, potash, and nitrates is entirely inadequate for this Nation's need now and hereafter: Therefore be it

*Resolved*, (1) That we favor the encouragement by subsidy direct and indirect and in every other way of the production of such rare metals.

(2) That we favor the stimulation by every possible means of the production of gold and silver.

(3) That we do not favor Government control or operation of mines producing gold, silver, copper, lead, zinc, or other metals or minerals unless a shortage should develop therein: And be it further

*Resolved*, That copies of this resolution be sent to the Secretary of the American Mining Congress and to the various State organizations represented for transmission to their respective congressional delegations and the members of the various House and Senate committees concerned, to the Secretary of the Interior, and to the Director of the Bureau of Mines.

Mr. Chairman, at that meeting there were several prominent men from your State, headed by your excellent governor. There were several prominent men from your State, Senator Poindexter, headed by Mr. Wolfle. From the entire West prominent men flocked to Denver to protest against this proposed action on the part of the war minerals committee. That these gentlemen had this idea in mind I will show you conclusively. I am going to read to you from page 60 of the hearings before the House committee. Representative James asked Dr. Manning this question:

Is this bill broad enough to take up every industry that you wish to take care of?

Dr. Manning answered:

Practically. I would like to have seen the entire industry. That is rank heresy before some of these gentlemen here, I guess.

What can we do in the face of that, when this bill originally introduced in the House made it possible to take over the entire mineral of the United States. That provision in the House bill was remedied, and I will say that it was done through our having knowledge of the situation.

Mr. BASTIN. Do you think that the proponents of the bill are trying to do by subterfuge what they were unwilling to do openly?

Mr. MACBETH. Absolutely.

Mr. BASTIN. I wish to say for myself that I was in South America at the time it was mentioned, and I did not know that such a bill existed.

Dr. SMITH. You say that the purpose of the original bill was to take over and operate all the mining industry?

Mr. MACBETH. And petroleum.

Dr. SMITH. And petroleum?

Mr. MACBETH. Yes, sir; everything.

Dr. SMITH. Do you think that is within the scope of the present bill?

Mr. MACBETH. This bill is an offspring of the original bill. There are not many changes in this bill as compared with the original bill.

Dr. SMITH. Do you think this present bill is for the purpose of taking over and operating the mineral industry in so far as it is mentioned here?

Mr. MACBETH. Your original bill, Dr. Smith, introduced in the House, prior to amendment, would have made that possible. Now, we can not conceive just what you had in mind. You men are as intelligent as we are. We grant that. We know perfectly well that if we had come before Congress with a bill of that character we would have been accused, if we had been on your side of the question, of desiring to take it all over.

Dr. SMITH. You believe, then, the purpose was to take over the mineral industry?

Mr. MACBETH. We believe so, absolutely.

Dr. SMITH. I know that the committee, which was not an official committee, but a semiofficial committee, had no such purpose. I state that definitely so that it may go upon the record. I was in touch with what that committee was doing. I was not responsible for the committee, but I was in touch with it. At no time was it mentioned by the committee, which was headed by an outside mining engineer, that the purpose was to take over and operate the mines of this country. Any man who has had acquaintance with the members of that committee would never conceive that such was its purpose.

The CHAIRMAN. These remarks are merely the personal opinions of those interested.

Mr. MACBETH. I am voicing the expression of every prominent western mining man when I make that statement. At the recent copper price-fixing meeting it was put up to me to make this statement.

The CHAIRMAN. Our purpose is to get the facts as to whether or not it is advisable to enact such legislation.

Mr. MACBETH. I will pass that over, then.

I mentioned yesterday, Mr. Chairman, that I believe this matter should be attended to. The bill reads:

> The following-named mineral substances and ores, minerals, intermediate metallurgical products, metals, alloys, and chemical compounds thereof.

I think there should be some amendment there in order to relieve the entire chemical industry of the United States and a considerable portion of the patent medicine business from coming under the provisions of this act. These gentlemen do not want to do that. You can easily cut that out. I believe you should strike out the words "intermediate metallurgical products," so as not to leave that matter open to question.

At this time, Mr. Chairman, I would like to offer a resolution adopted by the Washington State Metal Mining Association, which I have also the honor to represent before this committee. The resolution is as follows:

RESOLUTION.

It having come to the attention of the members of the executive committee of the Washington State Metal Mining Association that much mining legislation was being considered by Congress in session at Washington, D. C., a meeting of the executive committee was called to consider these matters, and more particularly the Foster bill, known as H. R. 11259, and after carefully studying this bill the following resolution was adopted.

Whereas our investigation of H. R. 11259 leads us to believe that the aim and object of the framers of this bill were the support of the Army and Navy during the war, and they were to assure the supply and to stimulate the production of the minerals and metals named therein; our information on this subject also leads us to believe that the necessity for such legislation does

not exist, in that there is any real scarcity of the minerals and metals mentioned, with the exceptions of platinum and tin, the others specified being found abundantly in various parts of North America, and nearly all of them in various parts of the United States, to wit: Magnesite is being produced in large quantities in the States of California and Washington; antimony in the western regions of the United States and Canada; graphite, while not of so high a grade as that imported, is obtainable in satisfactory quantities and quality; tungsten is now being mined in substantial quantities from Nevada and molybdenum from New Mexico; and so on with nearly every other mineral and metal named in the bill; and

Whereas we see no reason of sufficient merit for adding to the burdens of Congress the consideration of any unnecessary and uncalled for legislation, as we consider H. R. 11259 to be; and

Whereas we are opposed to the needless and useless expenditure of the already heavily burdened taxpayers' money in the appropriation of $25,000,000 or $50,000,000 or any other sum, for the administration of this proposed act; and

Whereas the remarkable developments and achievements in the dye industry within the past two years are a notable illustration of what is constantly being accomplished by American brains, energy, and capital, when given the opportunity and the proper encouragement; and

Whereas we believe that, in lieu of the enactment of this bill or any similar bill, the mineral needs of our Government and those of the Army and Navy, would be more quickly and more efficiently met and served by the increasing and fixing of a stable price for those minerals and metals named in H. R. 11259, to an extent and at such a figure as would encourage and stimulate the production thereof, and thereby make available those minerals and metals in quantities sufficient for all needs, without governmental appropriation; and

Whereas our Government is now engaged in a mighty struggle against a greedy autocracy which dominates its people, their resources and their industries, without any spirit of fairness or just consideration, and it is therefore against the best interests of our Nation that any of the material assets of our country should be wrongfully depleted by any unfair legislation or unnecessary administrative control: Therefore be it

*Reesolved,* That the Washington State Metal Mining Association, through its executive committee in meeting assembled, representing the mining industry of the State of Washington, protest against the enactment of H. R. 11259; that we call upon our Senators and Representatives at Washington, D. C., to oppose this bill by all proper means, to the end that the needs of our Government in all its departments, and the interests of the mining industry of our country, be met and served in the best manner possible; and that a copy of these resolutions be mailed to each of our Senators and Congressmen, the chairman of House and Senate Committees on Mines and Mining, the Speaker of the House of Representatives, and the President of the Senate.

WASHINGTON STATE METAL MINING ASSOCIATION,
By GEORGE TURNER, *President,*
C. WOLFLE, *Chairman Executive Committee,*
M. E. POOLE, *Secretary pro tempore.*

MAY 15, 1918.

Mr. Chairman, I have been requested by Senator Jones and Senator Shafroth to give my views as to the metals and minerals under consideration in this bill. I will therefore enter into that. I wish to preface my statement with respect to these metals and minerals with this: That, unfortunately for the country at this time, we have not in our possession as full a statement of our resources of such minerals and metals as we should have. When I make that statement, Mr. Chairman, I do not wish to be placed in the position of criticizing the Geological Survey or the Bureau of Mines, because this is a proposition which has been brought up within a very short time and these gentlemen have not had the opportunity to go out into the vast West and ascertain what we have.

I can speak with some authority on this thing for this reason: Two years ago I sent out 1,500 postal cards to prospectors, principally in

the States of Washington, Montana, Oregon, Utah, and Idaho, advising them that if they had knowledge of any deposits of practically the metals called for in this bill we could make qualitative tests for them free of charge, in order to assist them. We desired them to open up such deposits. Naturally, I received a large number of replies and a large number of samples, of which we made tests. Some days I would get from 50 to 75. We had an assayor and two assistants at work continually making these tests. We paid for them ourserves in order to assist the mining industry. So I obtained a rather fair knowledge of the minerals such as probably the Survey could not get in a longer course of time.

I shall confine my remarks to my own State—Idaho—and I might say that I know practically every mine in it. I know almost every trail in it. I know all the mines. I will take, for instance, the question of antimony. It is set down as occurring in Shoshone County. I know of antimony occurrence in 15 different counties in Idaho. Yet the Survey has one county—Shoshone. I will not state that the antimony occurrences are all clean stibnite, but some deposits are clean stibnite and are very large in nature. In one of these plants there will be placed this spring a sublimating plant, to carry out the volatilization process, which will give a very large production of antimony.

Dr. SMITH. Mr. Macbeth, I would like to say that these are the principal sources arranged in the order of 1916 production. We have published statements of occurrences of different metals, but where there would be hundreds of occurrences in western States these statistics are simply based upon production.

Mr. MACBETH. That is only the production?

Dr. SMITH. That is so stated.

Mr. MACBETH. I will state that there are many that your people have not visited. I know that you have not visited that one in the Yellow Pine Basin, which, I think, is the largest deposit with clean stibnite of which we have any knowledge in the United States. That is owned by some Seattle people.

As to arsenic, I believe Mr. Kelley said that they took it out of pots and threw it away. The production to-day is up to what we want. I see no reason why arsenic should be considered in this bill at all. For what purpose ball clay or white burning plastic clay is included in this bill I can not grasp. It is said that it is to encourage the development of domestic deposits and improve methods of concentration. It gives a little further control and furnishes another job or two.

The CHAIRMAN. Would it be possible for you to get up a list of these so that you can put them in the record?

Mr. MACBETH. Yes, sir; I would be pleased to do that. I would like to do that. I think I could probably be assisted by a man who knows considerable about it.

The CHAIRMAN. I can see that it would take a number of hours to go through it here.

Mr. MACBETH. We will pass that, then.

I may say that there is one thing that I have overlooked. There is one situation that I want to discuss and that is manganese. That has been mentioned very generally here. I do not know, of course, and I can not tell what the Survey is doing, but I am positive that it is

doing what it can with its limited means. The Survey, however, does not know at this time what has been going on in the West in the matter of manganese production. There is a reference to a statement by the Survey that 2,800 tons would be shipped during the first quarter, from a certain mine. That mine, according to the Engineering and Mining Journal, under date of April 27, has been shipping 150 tons daily with the expectation of raising it to 300 tons, which would mean a large increase.

Sunday a well-known man from Salt Lake, whom I know and you know, Senator—a man of large means—came here to see me to ascertain what he could do with a lot of manganese ore he was mining at Ely, in your State. I referred him to the alloys committee of the steel people and he left Sunday night for Pittsburgh to enter into a contract with these people for at least 600 tons a month, with the privilege of increasing that amount 50 per cent, of very high-grade manganese that compares favorably with the Brazilian product, and he informed me that there were many manganese deposits around Ely that could be made productive anywhere along the present price. I do not know what you know about that.

There are a number of other manganese deposits I could mention on which the Survey at this time has not knowledge. I would ask a revised statement from these gentlemen on manganese.

These steel companies have cut down the percentage of metallic manganese to 70 per cent, from 78 to 82 per cent, and Mr. Kerr, of the Steel Corporation, has recently stated they were making some from 60 to 63 to see if that would not answer. And Mr. Carnahan, who is here, said he could work on 65 per cent. Will not that mean, with the use of less of this high-grade ore, an opportunity to use a considerable quantity of our lower grade domestic ores? In other words, will it not be possible to lift your domestic production?

Dr. SMITH. Mr. Chairman, that is the purpose of this change in metallurgical practice.

Mr. MACBETH. Have you made allowance for that in your statement as to manganese production in the United States?

Dr. SMITH. We have advocated that change in order to make the domestic supply come nearer to meeting the Nation's needs.

Mr. MACBETH. Have you included in your estimate—you say 240,000 tons, with 120,000 for the first quarter. You only allow 120,000 for the second quarter, whereas you are going to have a greatly increased amount.

Dr. SMITH. We hope so.

Mr. MACBETH. But you do not make that statement; you say flat 240,000.

Mr. WHITE. So, that 240,000, which is estimated on the basis of high-grade ore, while it may run 40 per cent and over, will not make 80 per cent ferromanganese. Of course, that is simply an estimate based on actual performance of mines, and of course it may increase much beyond that point, but this reduction in the grade of alloys will be more or less necessary even to utilize the domestic production, which oftentimes is high in certain impurities which formerly had not been accepted, and of course the reduction in that alloy might bring on a good deal more, or below 40 per cent, which is not included in that 240.000 estimate.

Dr. SMITH. The Survey's statement regarding the developed mine in Clark County is, of course, the statement of the operator himself, and the estimates regarding 1918 production for the first half of the year are based upon direct statements of the operators themselves, so that it is not a Washington, D. C., estimate, but it is an United States estimate, coming from all of the interested parties.

Mr. MACBETH. The point I raise, Mr. Chairman, is this, there have been during this discussion a number of manganese deposits opened, and as a result of this discussion I may say, of which you at this time have not any knowledge. That is the idea. You will get it, but you haven't it now.

Have you any questions you would like to ask me, Mr. Chairman?

The CHAIRMAN. You have referred in the course of the hearing in some of your questions to the lead situation. What action has been taken by the Council of National Defense, if you know, regarding the price of lead?

Mr. MACBETH. I have knowledge of that, but a gentleman who furnishes a good proportion of lead to the Government is in this room at the present time, and I believe it would be well for him to reply to that instead of myself, as to the price, if it is something that is to be disclosed. I do not know whether it is or not.

The CHAIRMAN. Approximately what percentage of the lead output of the country is required by the Government?

Mr. MACBETH. I think somewhere between 15 and 20 per cent.

The CHAIRMAN. Has the War Industries Board made any effort to stabilize the price of lead?

Mr. MACBETH. Yes; by threatening to establish a price provided there was a runaway market, and I want to say this, the lead producers of the United States have made every possible effort to keep the market at a certain level by seeing there were stores of lead—stocks of lead—in the various sections of the United Stataes to supply local demands.

The CHAIRMAN. May I ask to what extent the Government purchases of silver at $1 an ounce would benefit the lead producers of the country?

Mr. MACBETH. I should like to have you present that question to one of the largest lead-silver producers of the United States, who happens to be in this room. He is better qualified to answer that than I.

The CHAIRMAN. Mr. Day, I have just asked Mr. Macbeth to what extent the Government's purchases of silver at $1 an ounce will benefit the lead producers of the country, if any.

Mr. DAY. It will give him a certain portion of increased income which will help him to bear his expenses.

The CHAIRMAN. It will be of some assistance, then, to the lead industry as well as to the silver industry?

Mr. DAY. Yes; quite materially so, to these desilverized-lead producers, whose ores carry some silver. Of course it makes no difference to the soft-lead producers of the Mississippi Valley, but to the Rocky Mountain and Pacific coast producers it does make a material difference.

The CHAIRMAN. Is it reasonable for the Government to expect private enterprise to embark upon undertakings when they are con-

fronted with so much uncertainties and under conditions which make it exceedingly doubtful whether a mine or a group of mines will be profitable.

Mr. MACBETH. That depends altogether, Mr. Chairman, on the nature of the metal. I would state, however, at this time, that we expect, with the excess-profits tax and with the uncertainty of the money market that there will be no new development in the mines in the West. We have to contend with disturbed labor conditions, with decreased efficiency of labor, high cost of labor, high cost of supplies all around, greatly increased freight rates, and you can not expect at this time men to go into new enterprises.

The CHAIRMAN. Do you think that the condition should be allowed to remain in its present situation?

Mr. MACBETH. Mr. Chairman, I believe that the mining industry should be placed in a separate classification with respect to taxation. The mining industry is a wasting industry that raises only one crop; when that crop is gone you are done. But allowance has not been made in your excess-profits tax for this condition of the mining industry, and it is that to-day that has cast a cloud over all mining development, more so than anything else.

The CHAIRMAN. You have heard most of the testimony given at these hearings, have you not?

Mr. MACBETH. Yes, sir.

The CHAIRMAN. You have heard different witnesses testify relative to the shipping situation?

Mr. MACBETH. Yes.

The CHAIRMAN. Do you think that some legislation is necessary in order to really encourage the production of these rare metals in order to relieve that situation as far as possible.

Mr. MACBETH. I consider so; I believe that if you had some central authority handling a few of these metals that we need—not this zirconium stuff, and the rest of such stuff that has been included—but if you would get down to brass tacks and provide for the purchase of, we will say, such manganese, and particularly such potash, as we require, and possibly some pyrite, I believe it could be done.

The CHAIRMAN. You would think, then, some legislation is advisable?

Mr. MACBETH. I do; at this particular time.

The CHAIRMAN. The question, then, would be, What sort or kind of legislation should be provided in order to really encourage the production?

Mr. MACBETH. Appropriate your money, your funds, cut that $500,000 to about $100,000, increase your $10,000,000 to about $25,000,000, as that amount might be necessary, and turn that over to the War Industries Board and your whole matter is settled; you are done right there.

The CHAIRMAN. In other words, your idea is to make a fair appropriation so the matter could be handled properly?

Mr. MACBETH. If necessary; yes.

The CHAIRMAN. And then tell this agency that is created by this bill to go get the stuff?

Mr. MACBETH. Go get the stuff. Just as you would or any other man would in a businesslike way. Cut out all that red tape in the bill. This is not the time for red tape.

The CHAIRMAN. Would it be necessary to a certain extent to have some control so this agency could handle the matter and keep it within bounds and within its own power?

Mr. MACBETH. Make the control of the producer as small as possible, as light as possible, or there will be no producer.

Mr. MUDD. Mr. Macbeth, as I understand you, you have been sent here to represent the Idaho Miners' Association?

Mr. MACBETH. This question of this rare-metals bill, Mr. Mudd, came up unexpectedly. I came here originally on the excess-profits taxes matter. Then this question arose and I remained over for it.

Mr. MUDD. According to the resolution which you have just read, the Idaho Miners' Association condemned this bill in toto?

Mr. MACBETH. I should have qualified it. We have a number of chapters in my State. I should have qualified that by stating that was the Ada County Chapter in which the executive committee lives.

Mr. MUDD. The other chapters, then, have not expressed themselves.

Mr. MACBETH. Not that I am aware of, except in personal letters to me from men.

Mr. MUDD. As a representative of that association, or as a representative of that particular chapter, instead of condemning this whole bill as they do, you say strip it of its red tape, but leave in certain essential features such as the contract feature and ones which meet with your approval. Is that position consistent with the direction of the resolutions in your own organization?

Mr. MACBETH. That is a separate chapter. There are chapters at Wallace and Kellogg and other sections. I am following the main meeting in Denver on January 24, at which there were representatives from a large number of the chapters, and I am not following the action of the Ada County Chapter.

Mr. MUDD. Regarding that meeting, may I say it was because the committee felt the inclusion of all the major metals would arouse opposition that they abandoned the broad scope of the bill, not because they did not think it was useful and would not be constructive to the entire industry, but because they felt there would be so much opposition of getting a broad bill through that they changed it as a matter of expediency? In other words, the western miners were consulted and their wishes were followed as far as the committee was aware?

Mr. MACBETH. And it was due to this fact that you knew we had sufficient strength to prevent you from putting it over on us; not from any lack of desire to do so, because your director, Dr. Manning, stated at the House hearing that he would like to have it done.

Mr. WHITE. Just one question. Mr. Macbeth, have you made any effort to familiarize yourself with the field examinations or program of investigations on pyrite-manganese situation as carried on by the field workers of the Bureau of Mines or the Geological Survey?

Mr. MACBETH. I have general knowledge of the pyrite situation in the West. I made a statement the other day I wish to correct, and which was due to my having been wrongly informed. I stated there were a million and a half tons on dumps at Denver. Such is not so. There is a million and a half tons blocked out in the mines.

Mr. WHITE. At Leadville?

Mr. MACBETH. At Leadville, rather. In Bingham Canyon, in Utah; if you gentlemen want any pyrite, if you will go there, they will be glad to have you haul it away.

Mr. WHITE. That does not answer my question.

Mr. MACBETH. No; I have not answered it,

Mr. WHITE. Have you taken up with the Shipping Board in detail the question of the import of such materials as ball clay, kaolin, and other materials put in this bill very largely at the suggestion of the Shipping Board?

Mr. MACBETH. I was not aware the Shipping Board had placed the ball clays and kaolin in this bill. I concluded, following the general scope of the bill, they were included for the purpose of controlling the newspapers through these minerals which are used in the manufacture of paper. I thought you were reaching out just a little bit more.

Mr. WHITE. Mr Chairman, I simply wanted to ask those questions in view of the fact that Mr. Macbeth has made statements that neither the Bureau of Mines nor the Geological Survey had examined the deposits to the extent of being familiar with them, and it appears he has not consulted with either of the bureaus in an attempt to find out to what extent they had examined such deposits.

Mr. MACBETH. Mr. Chairman, not long ago, when your Mr. Hewitt was present, I brought up the question of the Clark County, Nev., deposit, and your field man had not reached there then—that is, Nevada, but he hoped to reach there; you will find it in the record. I brought up the question of the deposit in Adams County, Idaho, which was being opened up. He had received information concerning it and hoped to get there. I mentioned a deposit in the Clearwater, of which he had no knowledge. I have mentioned this morning the circumstance of a gentleman who was here, and who desired to enter into a 600-ton contract with somebody, and I referred him to the Alloys Committee. The point is this, I say, since this bill has been under consideration there have been mining developments in the West of which you have not the knowledge, therefore, I believe you should revise your manganese statement and take into consideration all of these new developments.

Mr. WHITE. The point which I wanted to make, Mr. Chairman—take, for example, the pyrite situation—the transportation from far western points is a very serious factor, and the Bureau of Mines has concluded a survey of all of the producing mines located in the eastern part of the United States, in Colorado, Wisconsin, the zinc district of Wisconsin, and Missouri sections, so that those areas have been covered and have held correspondence with the Black Hills area, so we feel in that particular illustration that we have covered all of those sources of pyrite which would be considered available under present conditions, including as far west as Colorado, South Dakota, and Arizona. We have had brought to our attention deposits in Utah and farther west, but with the present transportation situation and freight rates such a movement can not be considered until the situation becomes better than at the present time. I simply wanted to bring that statement in, as I understood Mr. Macbeth's statement to rather indicate that he did not consider that these deposits had been at all investigated. I will state that there are a

number of deposits in the West we have been unable to cover, but that does not mean a very comprehensive survey has not been made of some of these most important deposits.

The CHAIRMAN. Would it not appear from the statements made here that it is absolutely necessary to have more men in the United States Geological Survey?

Mr. MACBETH. It would appear to me, Mr. Chairman, that there should be less duplication of effort, of activities on the part of the Survey and the Bureau of Mines; that these gentlemen, instead of chasing each other around through the West should be under the control of one bureau.

The CHAIRMAN. They do separate lines of work, do they not?

Mr. MACBETH. They go to the same properties. Why should they do that? I can give you a personal experience I had with a gentleman who I wish to state is one of the best field men in the Geological Survey, Mr. J. B. Umpleby, who has the confidence and esteem of the mining men of Idaho in a high degree. Two years and a little over ago I was with Mr. Umpleby in a section of Idaho in which few men have ever gone, and we went over a number of properties, and he left me and went on down the river into the Lemhi Valley and examined a number of properties down there, and lo and behold, last year men from the Bureau of Mines went over the same section. I did not see the necessity for that. There had been a full and complete report made by Mr. Umpleby. I wish to call your attention to this while you are right there, Dr. Smith.

The CHAIRMAN. Right there, did you make inquiry either of the Bureau of Mines or of the Geological Survey as to whether or not this work was a duplication?

Mr. MACBETH. It could be nothing else.

The CHAIRMAN. Do you know along what lines the two departments were working?

Mr. MACBETH. Ascertaining the nature of the deposits. Look at the Bureau of Mines; it needs money for its war work—$250,000. Why should the bureau not go to the Survey for the data it desires, and why should the money not go to the Survey, where it belongs? You are giving money to the Survey for a similar purpose, you know. Why do we want one man chasing throughout the country for the Bureau of Mines and another following him up for the Survey?

The CHAIRMAN. The Bureau of Mines and the United States Geological Survey are not on trial here; it is a bill we are considering.

Mr. MACBETH. That is true. The gentleman opened up the subject, and I could not help enlightening him.

## STATEMENT OF DR. GEORGE OTIS SMITH, DIRECTOR OF THE UNITED STATES GEOLOGICAL SURVEY.

The CHAIRMAN. Dr. Smith, I should like to have you state for the benefit of the record the work and the scope of the United States Geological Survey.

Dr. SMITH. Mr. Chairman, I think you wish simply a statement bearing upon the present situation?

The CHAIRMAN. Yes.

Dr. SMITH. The particular minerals that have come to take on large importance in view of the demands that have come to the coun-

try in connection with the prosecution of the war. The Geological Survey is, of course, an investigative bureau and those investigations that have been under way for nearly 40 years have some relation to the legislation that is urged at this time. In two ways the survey has carried on work throughout the country that has a direct bearing upon the particular minerals that we group together as the war minerals.

The geological examinations of the country, and especially of the West, have consisted largely of a study of the mineral deposits, the distribution and the occurrence of these ores, and special attention has been given to the extent of the reserves available for development. Now, that work has not been carried on simply since the beginning of the war in 1914. I can state from personal experience that nearly 20 years ago I was engaged in examining chromite, mercury, and antimony prospects in the Cascade Mountains of Washington and the records of the field work done in this way 20 and 30 years ago, not simply by one geologist, but by scores of geologists, have accumulated, through the years furnishing a large mass of authoritative data.

To give another illustration of how that is available, yesterday Mr. MacDowell, of the War Industries Board, called me up with reference to a sulphur deposit that had been brought to his attention in Utah by a telegram, and I was able to telephone him a few minutes later and send to his office references to this sulphur deposit made in two of the survey publications, one of them based upon examination probably 10 years ago, and reference also to observations made on one of these deposits as early as the 70's, by one of the survey geologists, at that time, however, connected with one of the earlier organizations, which preceded the United States Geological Survey, but the geologist later became one of the geologists of our survey.

Those I give simply as illustrations to show that this geological work has been carried on through a series of years. During the same period there has also been another type of work, namely, the collection of statistics, which since 1880 has brought the survey into close and continuous touch with the industry, and I might emphasize the fact that nowhere has that touch been closer than throughout the West. Of course, you are familiar with the fact that during this period the mineral industry, measured by its output, has increased from an annual output valued at $367,000,000 to perhaps nearly five billions in 1917. And during the period that the industry has been growing the survey organization, keeping in touch with the mineral industry, has been growing. Unfortunately we have not grown as fast as the industry, but yet the men that are collecting statistics now monthly on the subject of manganese and these other war minerals are those that have been in touch with the mining operations for several years and have the records of the past available.

I was interested to note the increased importance of the special minerals and metals mentioned in this bill. They have increased during this period from a valuation of only two and a half million back in 1880, taking simply 13 of these mineral substances, to a valuation of $170,000,000 or more, representing the consumptive needs of

the country at the present time, so the subject has taken on an increased importance. This collection of the mineral statistics has involved a constant correspondence with the producers, and the facts that have been presented to the committee in many of the statements here are facts that have come directly from the operators themselves, and that correspondence has been requesting information and giving information in return. This large fund of authoritative data has been available for the use of the war boards, very often that cooperation with the war boards being, as in the instance I cited, simply an informal telephone communication of facts already available.

I have mentioned simply the investigative work of the Geological Survey. A similar statement could, of course, be made regarding the investigative work of the Bureau of Mines, which is technological rather than geological, and, as you might say, depending in large measure upon the work of the Geological Survey. Or we could put it that the work of the Geological Survey contributes to the investigations in the mining and metallurgical and milling processes, and the study of all the problems connected with these subjects under the Bureau of Mines. That matter undoubtedly will be discussed by Director Manning, so I simply make the statement that this work can be considered as complementary, the work of the one bureau of the Interior Department to the other.

As illustrating the work of the Survey and its relation to this legislation, I should like to mention three instances: First, that of manganese. Last year the Geological Survey had 12 geologists in the field working on the subject of manganese. In their field examinations the work was done in eight of the Western States and six of the Eastern States, and recently one of these geologists, the geologist in charge of the geological work on manganese and related ores, visited Cuba, along with a mining engineer from the Bureau of Mines, studying the possibilities for manganese and chrome in Cuba as bearing upon our domestic problem. Now, the result of all these examinations has been promptly published and has also been used in connection with the planning and prosecution of the work of the Bureau of Mines, the geological work contributing, as I said, as a necessary preliminary of the important metallurgical investigations under way by the Bureau of Mines.

But in my opinion, and my opinion is based upon intimate experience, all of this investigative work is ineffective except as there may be administrative authority given to bring about the action that is needed to get the results. For instance, in this matter of manganese there was no real progress made in the matter of conserving and making the best use, on the part of the consumers, of the manganese ore available until the Shipping Board restricted imports. In other words, all of the investigative work of the two bureaus in the Interior Department was of little immediate use; it bore little immediate fruit until the Shipping Board acted in an administrative way.

Before I leave the matter of manganese I might add in connection with the testimony of the last witness that the Geological Survey is in possession of considerable information regarding manganese mining near Ely, Nev. The information we have is that there are four producing properties near Ely, and some. at least. of these—two of these—have been producing since 1916. There are also two new

ones in the development stage during the present year. These are southeast and south of Ely, and another property—one of the new properties—is west of Ely.

Reports from the manganese miners throughout the country are available for the first quarter of 1918, and we have also information based upon railroad shipments covering the month of April, so we are up to date and are in touch with the manganese situation to the extent of knowing that of the 600 special producers on our working list during the first quarter of 1918, 300 were shippers of manganese ore, as contrasted with 220 shipping during 1917. I mention those figures to show that in so far as investigative work is concerned and keeping in touch with the situation as it develops I think that it must be conceded that the Government bureaus have realized the importance of the problem and have covered the situation as thoroughly as possible with the appropriations available. And when I say the appropriations available I am keeping in mind that the Geological Survey, for instance, has something over $500,000 of its own annual appropriation under several items, which directly bear upon the subject of war minerals and these have been practically concentrated on the study of the war minerals, so that something is being done without securing the additional appropriations suggested in this legislation or elsewhere, and we intend to continue to concentrate our efforts on these problems.

I want to mention, as another illustration, potash. One of the witnesses, Mr. Taylor, of Colorado, brought out the interesting fact that he believed it was possible to utilize a large tonnage of tailings in his State as a source of potash. Back in 1915 Mr. Butler, the geologist working especially on copper, suggested the possibility of the utilization of the tailings that are available in such large amounts not only in Colorado but in Utah, Arizona, Montana, and New Mexico, and that suggestion came from the geologist simply based upon his field observations and the information at hand regarding the chemical composition of these tailings. The Bureau of Mines has studied, as Prof. Moore stated, the utilization of these tailings, their technologic work thus dovetailing into and following and being based upon the geologic investigation of the older bureau. But to make these investigations under Government authority of any avail we lack administrative power.

Mr. Taylor brought out the fact that all that was needed to induce him to go ahead and make some use of this material and of the information put at his service by the investigators of the Bureau of Mines was to be assured of a sufficient price for a sufficient period to allow him opportunity to amortize his plant and to secure some sort of a business profit. That is simply another reason for supporting the bill. Not to get more work for the Geological Survey or the Bureau of Mines, but to make the work we have already done of more usefulness to the Nation.

Then, if I may take still a third subject, sulphur. It was brought out in the testimony of one of the witnesses, and added to by comment of Mr. Wells, of the Bureau of Mines, that there is a possibility of substitution of pyrite and pyrrhotite for sulphur. The committee will remember Mr. Wells's testimony, in which he asked some estimate of the costs involved to make the substitution. Such a substitu-

tion must appeal to us, first of all, as a war measure, but we may see also the possibility of some lasting value, because not only some substitution for the sulphides for the native sulphur will increase the Nation's supply of this most essential raw material, but it would also help out the transportation problem, because, as I believe Senator Jones suggested to the committee the other day, one of our deficiencies is the shortage in transportation.

On this subject of the deposits of pyrite, especially here in the East, and some deposits of pyrrhotite, there has been a large amount of work done by both the Geological Survey and the Bureau of Mines, and Mr. Wells, in suggesting the practicability from a technological standpoint of a substitution in connection with the pulp mills of New England, could have based his statement upon geological work done in Maine, for instance, on a large deposit of pyrrhotite, which included definite estimates of the amount of ore available, with accompanying analyses giving the quality of that ore. And yet to get the full benefit of the work that has been done there must be somewhere governmental power to enforce this substitution. The paper mills will continue to make sulphite pulp by burning sulphur because it is easier, and possibly because it is more economical, although it may not prove more economical in the long run. But the substitution should be in some cases forced and there needs to be added governmental authority to bring about substitution where practicable.

It has been said that this bill was simply patterned after the Lever bill. I think we can see some points of similarity between the food situation and the mineral situation. Economy is needed in both. In one of our circular letters to the manganese operators, we used the statement that food will win the war, but the minerals must be there with which to fight the war.

Going into the food situation for the purpose of affording a somewhat parallel case, I think we might say that sulphur is like the white flour, and pyrite is like the corn meal. The cooks prefer the white flour, but there is just as much need to Hooverize in this mineral raw material, because we need the sulphur for the acid, which is the staff of life for so many of our industries; so the proposition is simply to save the sulphur for the military and munitions purposes and to make the rest use the pyrites or pyrrhotite, which is quite comparable to the corn meal. In the end I think the substitution may be followed by some changes in practice that will last long after the war.

Of course, I might mention the other substances that have been mentioned so many times, but I think these three are cases in point. The Federal work that has been done is not enough, it simply needs more power given to the strong right arm of the Government to enforce the economy and best use that is needed at the present time.

One criticism of the bill is that it includes too many things for which we can not give sufficient reason for their inclusion in the bill. We may find before the war is over that such a minerals controls act as is proposed and is under consideration by this committee may include too little rather than too much. There is one mineral substance, I think I should not give the name at this time, inquiries concerning which have just come to the Geological Survey based upon a cablegram from Gen. Pershing. The substance is not in-

cluded in this bill. It might be that later there will be need to include it. But the point I wish to make is at this time we can not foresee what may or what may not develop in the course of a few months.

Does that cover, Mr. Chairman, the points you desire?

The CHAIRMAN. I think so.

Mr. DAY. May I make a slight correction in my answer in regard to silver?

The CHAIRMAN. Yes.

Mr. DAY. That is, the advance in the price of silver to which we refer has in large part or wholly been swept away by the advance in freight rates which has just been announced.

The CHAIRMAN. We will now adjourn until 10 o'clock to-morrow morning.

(Whereupon, at 12 o'clock m., the committee adjourned until Wednesday, May 29, 1918, at 10 o'clock a. m.)

# MINERALS AND METALS FOR WAR PURPOSES.

WEDNESDAY, MAY 29, 1918.

UNITED STATES SENATE,
COMMITTEE ON MINES AND MINING,
*Washington, D. C.*

The committee met at 10 o'clock a. m., Senator Charles B. Henderson (chairman) presiding.

Present: Senators Shafroth and Jones of New Mexico; also Dr. Van. H. Manning, Director of the Bureau of Mines; Messrs. A. G. White and H. S. Mudd, of the Bureau of Mines; and Mr. Bastin, of the Geological Survey.

The CHAIRMAN. The committee will come to order. Dr. Manning, you may proceed with such statement as you have to make to the committee in regard to this bill that is now under consideration.

## STATEMENT OF DR. VAN. H. MANNING, DIRECTOR OF THE BUREAU OF MINES.

Dr. MANNING. Mr. Chairman and gentlemen, under the act approved February 25, 1913, provision is made, among other things, as follows:

> The Bureau of Mines shall conduct inquiries and scientific and technologic investigations concerning mining and the preparation, treatment, and utilization of mineral substances, with a view to improving health conditions and increasing safety and efficient economic development, and conserving resources through the prevention of waste in the mining, quarrying, metallurgical, and other mineral industries.

This was very wise legislation, in my opinion, and I would like at this time to give a brief summary in the form of a chart which I have prepared, showing the work which the Bureau of Mines is engaged upon at this time, which indicates that probably from 90 to 95 per cent of that work is tied up in some form or other with the prosecution of the war. A year ago the employees of the Bureau of Mines numbered about 600. At the present time the number is probably 2,000. The acquisition has been largely due to problems which have been given to the bureau by the War and Navy Departments—and our regular force has been increased in a small way—on account of problems that we have been called upon to meet and the investigations that we have been asked to make by the different agencies in Washington that have to do with war measures.

Mr. Chairman, the history of this bill is very interesting. It dates back about 18 months ago. I was a member of several of the many committees that Mr. Baruch appointed when he was in charge of the raw-materials division of the Council of National Defense, and the

question of pyrites importation was discussed at that time. It was brought to the attention of the committee that the British Admiralty was restricting and intended to further restrict the importation of Spanish pyrites in this country.

The first thought that occurred to me was the development of our resources; that it was the psychological time to develop domestic resources, as far as pyrite was concerned; and I may say that the origin of this bill centered around the pyrite situation. It occurred to me, being charged by Congress with the development of our own resources, that we should undertake to do something through education and through field examinations and investigations to see whether or not we could not only produce pyrites in sufficient quantity, but other minerals that I felt justified in believing, in my own opinion, should be developed and that it would be wise if we should do something in that respect. In my judgment, if we had started out at that time and developed our own pyrite industry, I believe to-day it would be in a stable condition. Frankly, I have been interested in the development of our own resources as a war measure and a post-war measure as well, because I am a firm believer in the development of our domestic mineral resources, which we have in plenty, and it is with a great deal of pleasure that I say that I have been the chief proponent of this bill, because I thought it was my duty to point out to Congress my conception of what I thought we should do under present war conditions. And, being the chief proponent of the bill, I want to say that it was not for the purpose or with the idea that it was one of personal or bureau aggrandizement. I will willingly take my chance with the President and Congress as to who shall administer the bill.

The bill was first submitted to Dr. Foster for consideration, and I also felt that every agency in the country that would be interested in this bill should give it careful consideration, and a copy of the original bill was sent out to them to criticize constructively. It was published in the magazines and journals. The original bill included all metals, because I believed that prices on all commodities should be fixed rather than on a few. In considering the major metals I felt they would get more consideration by having the raw material which go into the manufacture of iron and steel, copper, lead, and zinc, etc., included in the bill than they would if prices were fixed on those three major metals only, and the raw material or rarer metals that go into the manufacture of those metals were allowed to bring any price that could be obtained. In other words, I believe if we are going to fix a price on any materials we should include every one in the category.

This bill was presented to Dr. Foster with those items which, as I say, we thought it best to include, and we did that rather than to segregate a few and allow the others to go as they pleased.

As I say, the bill was first presented to Dr. Foster, who in turn conferred with a great many people. It was concluded to eliminate the major metals since there were some objections, which objections mainly came from the producers of the major metals.

Senator JONES of New Mexico. Is this Dr. Foster to whom you refer a Representative?

Dr. MANNING. He is chairman of the Committee on Mines and Mining of the House. I said that in the original bill it was suggested

that all minerals be included. I realized that the bill was not perfect—no bills are perfect. I realized also that there was going to be a difference of opinion, as there always has been, and that this was simply a suggestion of what I thought ought to be contained in the bill as far as the mining industry was concerned. On all the committees on which I had been appointed by Mr. Baruch—about 22 of them—I was never concerned alone with the question of price; it was more a question of production with me.

The indorsers of this bill have been from the President of the United States down the line. The President on three different occasions has given his approval to the principles involved, and the object sought under what is called the Foster bill. The War Industries Board, represented by Mr. Baruch—in charge of raw materials—and he is now chairman of that board, and Mr. Yateman, an associate of Mr. Baruch, urged the necessity of the powers granted under this bill. I felt that they were in a better position than anybody else to determine whether a bill of this sort was necessary, and I conferred freely with them, and in reply to the question of the necessity of the Government taking care of these minerals, Mr. Baruch has very emphatically stated that these minerals should be handled in some such way as is proposed in this bill. He further said that it was necessary to take immediate action. As I recall his statement—it appears in the hearings—he said that this is something that ought to be done right away.

The representatives of the Shipping Board have advocated the immediate necessity of this bill before the House and Senate committees and have urged that it should be promptly passed. The bill was presented to the House committee with a limited number of minerals, but in compliance with the suggestions of the Shipping Board, which pointed out the fact that we might have to consider the restriction of importation of other minerals, it was decided to include a number of others, so that we would not have to go back and ask Congress for additional legislation.

Mr. Hoover, United States Food Administrator, and a mining engineer by profession, and a very successful one, in his statement before the House committee favored the minimum guaranty to stimulate production, and further stated, "Aside from the stimulation of production, the objective of the legislation is to curtail profiteering. I feel very strongly that this is necessary." He very strongly indorses the bill.

The Association of State Geologists is very strongly in favor of the measure. The board of directors of the American Institute of Mining Engineers, men of large experience, engaged in the active direction of mining enterprises, passed a resolution indorsing the purpose and general principles involved in the bill now under consideration. This organization is composed of some six or seven thousand members, representing all parts of the United States.

The New York section of the Mining and Metallurgical Society of America is in favor of the bill, having passed a resolution favoring it.

The secretary of the Colorado chapter of the American Mining Congress, with representatives from Nevada, Colorado, Utah, Wyoming, and Montana, sent the following telegram:

Meeting April 29, representing 95 per cent Colorado output of tungsten, more than one-third of entire production of country, unanimous in support of Foster

bill as outlined at hearing and are opposed to elimination of price-fixing and licensing provisions as proposed by Senate measure. Believe adequate and stabilized price is only way to increase output. Manganese and pyrite producers of the State meet soon and will concur. Under the provisions of Foster bill believe it possible to increase Colorado output of manganese, pyrite, and tungsten from 75 to 100 per cent. All here desire to cooperate with the purposes of the bill as outlined and will be glad to lend whatever assistance we may.

The Mining and Scientific Press strongly indorses the bill.

Dr. Nichols, chairman of the General Chemical Co., one of the biggest companies in the world, says:

I heartily agree with the idea of encouraging production of these various minerals, that if the Government will guarantee it against loss to the extent that you provide in the bill, and I also agree with Mr. Baruch that the sooner that is put into effect the better, and with the least possible delay.

I would base the legislation on the supposition that the deposits are moderately small and that they would have to be encouraged or they would not be justified in going on with their work. I think that if that be done there will be a material increase in the output of pyrites, which, as I say, is one of the most essential of the materials that we need in this country, having been cut off to such a large extent from Spain.

Mr. Pope Yeatman, of the War Industries Board, sent me a telegram from Samuel H. Dolbear, of San Francisco, Cal., representing the American Refractories Co., indorsing the objects sought to be attained by this bill.

The principal opposition, Mr. Chairman, comes from two groups. First, it comes from the importers and some consumers who are accustomed to dealing with foreign materials; and, secondly, certain large mining interests—particularly copper and lead—who fear that the bill may be stretched to cover their industries. The bill as it passed the House of Representatives expressly states the objects sought to be accomplished. It says "the minerals mentioned in this bill only," and by no possible stretch of imagination could it cover copper, lead, zinc, iron, and steel. It is not intended—the law does not state that it is intended—and I can not conceive that any administrator would go contrary to the implied legislation if it is not specifically provided.

It is further contended that the provisions of the bill relating to guaranteed prices and time contracts will not stimulate production, on the ground either that such increase in production is not possible, or that it will take place under the law of supply and demand without legislation.

It is also argued that the regulatory powers of the bill, such as licensing, requisitioning, and control of unreasonable profits are unnecessary and will constitute an interference with the industry.

Mr. Chairman, that is all of the general statement I care to make to the committee. You have heard the discussion here pro and con relative to this bill. You have heard arguments on both sides, and I do not want to take up your time by repetition. I am prepared to discuss the bill and to answer any questions that may be asked me, and to give justification of the minerals included in the bill, showing the wide range of the problems involved.

The CHAIRMAN. Dr. Manning, I wish you would state to the committee specifically the reasons for your including all of the metals and ores that are included in the bill.

Dr. MANNING. The justification for that provision, Mr. Chairman, may be divided, I may say, under three heads, as follows: First,

immediate production problems, involving large ship tonnage to import manganese, pyrites, chromite, graphite, antimony, clays, chalk, corundum, emery, fuller's earth, grinding pebbles, and sea salt, also minerals of which the foreign supply is inadequate, uncertain, or already cut off, such as potash, magnesite, and mica; also minerals for gas warfare and military purposes. I have already given a statement to the committee as to those minerals that go into the manufacture of gases used in warfare. In formation from Gen. Pershing indicates that the Germans are using about 3,000 tons of one of the minerals mentioned in this bill for the manufacture of gas used in warfare.

Senator JONES of New Mexico. Daily?

Dr. MANNING. Daily; yes, sir.

The CHAIRMAN. And your reason for not mentioning the mineral at this time——

Dr. MANNING. Is the confidential character of those minerals that are to be used in the manufacture of gases.

Second, there is the anticipated production problem, due to the probability of shortage, or new uses, or inadequate plant equipment. Minerals in this group include cobalt, molybdenum, tungsten, vanadium, uranium, thorium, cerium, zirconium, titanium, ferrosilicon, sulphur, mercury, and antimony.

Third, a number of minerals have been included because they introduce problems of regulation. For example, the allocation of supply and curtailment of nonessential uses of platinum, including iridium, osmium, and palladium, also tin, radium, manganese, chromite, arsenic, sulphur, and sulphuric acid. Regulations would also be framed to correct profiteering and evil practices. As I stated before, many of these minerals were put in at the suggestion of the Shipping Board.

The CHAIRMAN. I wish you would explain to the committee that section of the bill referring to licensing, and give your idea of how that will operate, and what effect, if any, it will have upon production.

Dr. MANNING. Section 2 provides that regulations may be made to effectively carry out the provisions of this act. The regulations may be divided into three groups, according to the things which they are intended to accomplish: First, to assist in administration; secondly, to secure more economical utilization of resources; and third, to prevent unfair practices. The licensing provision, which is section 5, is the instrument by which the regulations may be enforced.

Mr. Chairman, we would have first the question of administration, which would include the compilation of statistics and cost; next, constructive regulations, designed to standardize methods of grading, sampling, and settlements, and to correct uneconomic customs, cross hauls, etc. In other words, to create zoning districts so that the burden on the transportation systems would be reduced. Rather than ship sulphuric acid from New York to Michigan, and at the same time ship acid from Michigan to New York, there would be some regulation restricting these cross hauls and limiting transportation to that extent.

The CHAIRMAN. What I want to get at particularly is just how the licensing feature of this bill will operate on the producer.

Dr. MANNING. Take, for example, the matter of organization in the use of county officers as licensing agent. These officers would license producers above a certain tonnage per month. The system does not contemplate an examination before issuance, but later any complaints would be followed up. In other words, through Presidential proclamation, all of these producers would be licensed. We do not want to curtail production by withholding a license from any producer, no matter whether large or small, but say to the prospective producers, "You will receive a license through a Presidential proclamation, so you can go ahead."

Senator SHAFROTH. Do you claim now that the President has that authority?

Dr. MANNING. No; but under the bill he would have—under the regulation prescribed.

The CHAIRMAN. You referred to examining complaints. What complaints do you have in mind that could be made against producers?

Dr. MANNING. I have this in mind, that some of the manganese people did complain that they could not get steel, could not get railroad cars, or that discrimination had been made against them. They could find no market for their supplies.

The CHAIRMAN. You mean it would not be a complaint against the producer?

Dr. MANNING. Oh, no.

The CHAIRMAN. But a complaint by the producer on a matter that was interfering with his production?

Dr. MANNING. Yes, sir.

The CHAIRMAN. In other words, as I understand you, the producer under the licensing feature will hardly be interfered with at all?

Dr. MANNING. Yes, sir. The Bureau of Mines has had complaints from time to time because of the way in which samples were taken. For example, complaints were made of smelters, to the effect that the smelters were not paying producers for some of the by-product or secondary minerals but only paying for the major metals which they contracted for. It is not intended to interfere with mining methods in any way unless they are very inefficient or wasteful. The bureau is operating under certain limited conditions now. We examine a mine; we are free to give advice to the operators, and we extend it, especially after a disaster. There is no law that can compel the operators to allow the bureau to go in a mine after a disaster, but when we make an examination and find a bad condition or improper mining methods the operators receive a copy of that report. It does not go to the public. The operators have shown a fine spirit, and wherever the bureau has made complaint or made suggestion they have tried to remedy it. The bureau has been subpœnaed before coroners' juries and requested to testify regarding disasters or to adjust complaints between the operators and miners, but so far have refrained from doing it. We hope to get the work done through cooperation and in a friendly way rather than by the use of more drastic methods.

At the discretion of the administrator licenses would be issued to (*a*) producers mining in excess of a certain tonnage per month of

the commodity specified, (*b*) brokers or middlemen, (*c*) smelters and refiners or chemical companies, and (*d*) ultimate consumers.

Under this system of licensing a large clerical force would not be needed, because we could handle it as we do the explosives bill, which has been working very effectively, by utilizing State agencies and county officers. And then again, Mr. Chairman, it would give the administrator the opportunity to collect the statistics which are now given voluntarily. I make this statement advisedly, that the Government does not always get correct statistics. Reports are made of as many different kinds as there are State and Federal agencies requesting these statistics. It is a burden upon all companies, and if we can get a uniform system I think it will be a help to the industry to have such regulation as may be provided.

And again, Mr. Chairman, when determining or fixing a guaranteed minimum price, the administrator must be in possession of a large amount of cost data, which he must have to reach any reasonable conclusion as to what is a fair price, either maximum or minimum. The licensing section provides that cost data may be obtained by the administrator.

The CHAIRMAN. It has been suggested here that the licensing feature of this bill might tend to discourage instead of encourage the production of these rare metals and ores. In your opinion, Dr. Manning, what do you thing the effect will be?

Dr. MANNING. I do not believe it would; I can not conceive how that would come about, Mr. Chairman. Of course, I realize that the question of price fixing has been a very serious one and a delicate one, and it is one that I have given much thought to, but as I said just now, when the question of price came up before the War Industries Board, I did not enter into the discussion, and was not interested in that feature of it so much as I was in the feature of getting out materials that we require. But I do want to emphasize the statement before the Senators who were not present a few moments ago, that I believe if we are going to fix a price on one commodity, we ought to fix prices on them all.

With regard to Senator Shafroth's statement of the price of wheat —if I may be allowed to criticise respectfully—the price to the farmer on other cereals might be fixed, and the Government might also have said, you can not feed your wheat to the stock.

Senator BAIRD. How are you going to fix a price at some of these mines that I understand are some 30 miles away from the railroad, as against a mine that is close to the railroad?

Dr. MANNING. I will answer by saying that under the provisions of this bill there are several methods of computing it. From the consideration I have given the bill so far, I would be in favor of making a contract with the producer on the railroad, who is making a reasonable profit now. As to the man 25 miles from the railroad, give him every encouragement, and if necessary, build a road out to his mine.

Senator BAIRD. He ought to have a larger price for the production of the ore.

Dr. MANNING. I can conceive that in many places in the West, these men would not have the money to build a road. They could not put up a bond. They might be pledged to produce the material——

The CHAIRMAN. It has been suggested that we make a reasonable appropriation and have just as few regulatory features in the bill as possible, and have it so that a good price can be offered for these metals and ores and then just say to the miner, "produce them."

Dr. MANNING. Mr. Chairman, I want to go on record emphatically that what we want to accomplish under this bill is to get the minerals in the most reasonable and expeditious way that we can get them, and further, we should also at this time look forward to the post-war conditions, when we should continue to increase and develop the mineral resources of our country. I realize that we have to consider the trade relations with foreign countries, but that is a matter that can be taken care of when the war is over.

The CHAIRMAN. Some criticism has been made of the bill relative to the licensing feature and price-fixing feature. They seem to be the two main objectionable features in the bill.

Dr. MANNING. Mr. Chairman, objections are always going to be made to price-fixing. I can sympathize with the industries, particularly the iron and steel, lead, zinc, and copper industries, to which price fixing has been applied. I recall a witness who appeared before this committee some time ago, and when I asked him the direct question if he was furnishing the Government with all the materials it needed, he said "Yes." The next morning I picked up a newspaper and saw a statement that emanated from the War Industries Board, which said that the board would have an examination made of the entire iron and steel industry, in order to see whether the Government should take over those industries. That is a condition that I hope will not happen, and I had that thought in mind when Senator Pomerene's bill to take over the iron and steel industries was introduced some months ago. And then there was the coal industry. We wanted to use foresight if possible and get them all in under one head rather than to pick out one commodity and leave the others out.

The CHAIRMAN. Each mineral presents a different problem, does it not?

Dr. MANNING. Absolutely; you can not consider them collectively; you must consider each material separately.

Senator SHAFROTH. Dr. Manning, I wish you would state your view as to whether it is feasible to restore this fund back to the $50,000,000, and make it a revolving fund, and instead of having a maximum price or minimum price or licensing system, to have direct contracts for the purchase of the material for the Government from those individuals.

Dr. MANNING. I think under the bill that you can deal with it in two ways—it would be a matter of administration. I should prefer to see the contract system adopted throughout the whole country if I thought it would encourage development by small producers and encourage prospecting. As I said just now the small producer is unable to finance his mine. Whenever he finds anything he has to go to the large companies and they profit by it, and as to prospecting—and I have been over practically every State in the Union—my sympathy has been very largely with the prospector. If the contract system could work effectively with the large and small producers I would favor the contract system.

Senator SHAFROTH. As a matter of fact, under minimum price fixing, unless you would make the price to show a profit of a reasonable amount, you would not get the property developed?

Dr. MANNING. That is true, but that should not be a uniform price throughout the entire country, because local conditions would control.

Senator SHAFROTH. I understand that the condition arises that if you fix the price too high or very little the chances might be that you would have overproduction, and thereby impose upon the Government an enormous obligation.

Dr. MANNING. That is true; that is a condition that might arise.

Senator SHAFROTH. I have thought of that contract system by which the Government should take into consideration that there would be lots of people who would not be able to carry out their contracts, and make contracts for a good deal more than they needed, but limit it to a certain specified amount and work to that end. I have thought that that would protect the Government better than to have a flat minimum price in certain localities and certain districts, with a period extending over two years, which might produce millions of tons more of stuff than the Government would have use for.

Dr. MANNING. That is a condition that might arise, and I will tell you the difficulty that arose relative to the contract system, with particular reference to the time element. My good friend Kelley appeared before this committee the other day—and I am sorry I was unable to hear his testimony, but I want to tell an experience I had with certain officials of the Anaconda Copper Co., which shows that the officers of the larger corporations are not always of the same opinion when it comes to running the same business; and I say this in all good humor, because they are all good friends of mine.

Mr. Thayer, as a past president of the American Institute of Mining Engineers, was present at a meeting of the institute before this bill was introduced. I appeared before the directors in New York and put this bill up to them, and said: "Now, gentlemen, it is submitted to you for your approval or disapproval; we want your frank opinion about this bill." There were 16 directors present and 14 of them voted for it. Mr. Thayer did not vote. I was not present when the vote was taken; the ballot was taken on the next day and I did not attend, because I had to leave New York. Mr. Thayer withheld his vote, but made this statement: "Whatever my friend Manning says goes with me. If he thinks this bill is all right, I shall stand for it." That was an evidence of personal confidence in me which was, of course, very gratifying.

Later on, when the matter of an appropriation of $150,000 by Congress was suggested in order that the bureau might go out and make a search for several of the minerals which are needed at this time—manganese, pyrite, and also sulphuric acid, etc., for instance—I went to see Mr. Ryan, because for many months I have been trying to get the Government to contract for sulphuric acid, which could be made from sulphur fumes now going to waste in our western smelting plants, such as Anconda. I thought they ought to utilize those resources. I am on a board that has to do with the conservation of some of the sulphur from the Washoe smelter. It cost the Anaconda Copper Co. about $600,000 to put up a unit that will produce 125 tons of sulphuric acid a day. It was a very large expense,

so I went to Mr. Ryan and asked him, in connection with his statement regarding his ability to furnish ferromanganese, what his difficulty was and what sort of guaranty he wanted before investing $1,000,000 or more to produce ferromanganese. He said a contract from the Government with a time limit that would justify him in the expenditure of such a large sum of money, so that if the war should stop in six months he would not lose the investment. He said: "If I can make an arrangement or a contract—a long-time contract—with the Government, I will put up the money."

When I took the matter up of getting sulphuric acid from the smelters with the War Industries Board, they said they did not want to make the long haul, and that it was difficult to transport sulphuric acid. Then I changed it to the suggestion of building an explosive plant in the West and ship the explosives themselves. That was a matter of consideration for some time, and finally that was turned down. I have used every effort in my power to induce the producers themselves to get together and make some arrangement that would utilize the resources that are now going to waste.

Senator SHAFROTH. What argument was used against the last proposition that you presented?

Dr. MANNING. About the explosives?

Senator SHAFROTH. Yes; the manufacture of explosives.

Dr. MANNING. The question came up as to transportation facilities for some of the other raw materials, such as benzol, that enter into the manufacture of the explosive. I took the position that it was safer to ship benzol, etc., than sulphuric acid. A proposition came from Tacoma, Wash., I think, that the waste gases could be utilized and an explosive factory built under certain conditions. I am told that the Government is now financing a scheme to furnish money to two zinc smelters in Wisconsin. These companies do not put money up themselves, but the Government puts it up, and it is built under their direction.

Senator SHAFROTH. If the committee should take the view that it is better to enter into a contractual relation between the Government and these various persons who would be able to produce these minerals named in the bill, what would you say as to the size of the revolving fund that it will be necessary to appropriate?

Dr. MANNING. I want to answer that question perfectly frankly by saying that the first bill that was drafted included all metals. We took the sum that has been given to Mr. Hoover, $150,000,000. I could not tell, and nobody could tell, what amount of money would be necessary in connection with the administration of the measure. Under the present provisions of this bill we could create an organization similar to the wheat corporation which Mr. Hoover organized to handle that commodity.

Senator SHAFROTH. There would be no difficulty, however, would there, in increasing any fund to what might be necessary in order to produce this increase of these metals by subsequent act?

Dr. MANNING. I think not. The $50,000,000 would be a revolving fund, and as you buy material to be delivered and sold, either to the Government or mercantile plants, the moneys would be returned to the Government and used over and over again. It is merely a deposit to the credit of the administrator of $50,000,000 to go out and get the material.

Senator SHAFROTH. What do you think of the $10,000,000 provided for by the House?

Dr. MANNING. I do not think that amount will be adequate. I want to point out the fact the War Industries Board and other boards are functioning under present laws, but there is no agency which has authority as contemplated under this bill. Mr. Baruch's price fixing is through voluntary agreement with the producers, or through the authority granted to the Secretaries of the War and Navy Departments.

Senator SHAFROTH. With no power?

Dr. MANNING. No power to enforce it; and I know it is a fact that these producers are complaining right now as to the prices that have been agreed upon. The price of copper, I understand, is going to run for 75 days at the present price of 23½ cents. Some of the copper men have told me that they are not making a profit on their refined product; they are losing money. Another man from the Northwest, who was in Washington a few days ago, told me that he would probably have to shut down his mine, that he was a small producer, and that he could not compete at the present price of 23½ cents for copper.

The CHAIRMAN. The same word has come to me from the small producers in the West.

Dr. MANNING. That is the man we ought to help, Mr. Chairman, in my opinion, and I want to say frankly that that is one of the purposes to be accomplished by this bill.

The CHAIRMAN. Of course, by this bill you could not take up copper.

Dr. MANNING. I think it ought to be taken up. Of course, it could not be taken up under this bill, because it is not contemplated to do it. But suppose copper was under this bill, then you could say to a man, "You will get 23½ cents; that will be your price." But as to the man producing a smaller quantity who could not operate at 23½ cents, you could give him 28 cents, after we found out under the licensing system what a reasonable profit would be.

Many months ago there was a committee appointed by the American Institute of Mining Engineers, some members of which were connected with the Iron and steel industry, to consider the substitution of our own low grade manganese for high grade manganese from Brazil. I found that the independent operators were responsive to it—the Colorado Fuel & Iron Co said, "We will back you in this proposition": also the Lackawanna Steel Co. indorsed the propaganda. I want to put in the record a letter which I addressed to Judge Gary. The letter dated October 11,1917, was addressed to Judge Gary, chairman of the committee on steel production, who is also chairman of the executive committee of the United States Steel Corporation. I outlined what we may be up against in the way of embargoes being placed on imported manganese, that we might have to use our own domestic resources, and asked cooperation to the extent to which they could afford it, and whether they would favor the proposition, but I never received an answer from Judge Gary. It was not until the Shipping Board cut off the imports from Brazil that they agreed to substitute low grade manganese for high grade. I ask permission to insert this letter.

The CHAIRMAN. Without objection the letter will be inserted in the record.

(The letter referred to is here printed in full, as follows:)

COPY.

OCTOBER 11, 1917.

Judge ELBERT H. GARY,
*Chairman Committee on Steel and Steel Products,*
*Council of National Defense, Washington, D. C.*

DEAR SIR: It is unnecessary for me to call your attention to the situation in which the United States finds itself at the present time in regard to manganese supplies for steel making. It is well known that one of the great problems which this Government will have to meet during the coming year will be to obtain ocean carriers to transport our armies and supplies to Europe. Not only will it be difficult to spare vessels for carrying manganese ore from Brazil and India to this country, but the economy in the use of ships for such purposes will be a distinct patriotic service.

Manganese is apparently essential in the making of good steel. The problem, therefore, that we must solve is, What kinds of manganese supplies have we in our own country and how may they be used to a greater extent than ever before without detriment either to quality or quantity of our steel production? The answer to this question involves a careful study of many phases of the situation. For this reason this bureau is making a thorough investigation of the subject and desires to carry on its work in close cooperation with those interested in this matter and who are affected by the situation.

The United States Geological Survey has for some time past been obtaining data on the location, character, and size of domestic manganese deposits, and the character of ore which could be produced. The War Minerals Committee has been instrumental in obtaining the patriotic services of individual mining engineers well up in the profession to devote their attention to the possibility of applying their experience toward increased production of manganese-bearing materials in the United States. To be of greatest value, however, we must study the possibility of using the materials that we might be able to produce, in the manufacture of steel.

To be successful, this work must receive the hearty cooperation of those engaged in making steel. It is for this reason that I am bringing this matter to the attention of your committee. So far as this bureau is concerned its principal work will be to act as a governmental agent for the assembling of data from various sources and the compiling of the same so that it may be most useful.

At the same time, it expects to carry on research work along scientific lines on certain phases of the problem which it is hoped will assist in interpreting many doubtful points. It is confidently believed that cooperative work along these lines can be made of tremendous economic importance to the United States during the present emergency, and also during the years of reconstruction following the war.

The Bureau of Mines has prepared an outline of this work covering the possibility of beneficiating certain types of domestic ore, the products of which might be used according to present practice in making ferro alloys; also the possibility of manufacturing, from other types of domestic ore, manganese alloys that are not now standard but that might be used to advantage. It is also carrying on investigations in order to determine if it be possible to use substitutes for the ferro alloys now used in steel manufacture. By this is meant alloys between the present standard 20 and 80 per cent alloys, manganese-silicon alloys, and others which might be made from domestic ores, also alloys not containing manganese.

I trust you will agree with me that such cooperative effort would not only be of value to the steel industry but, at the present time, has a decided bearing on the welfare of the Nation. If you look favorable on this matter I shall be very glad to have a representative of the Bureau of Mines confer with you or with any one whom you may designate, so as to permit a general discussion of this matter, and the formulation of plans for carrying on this work in such a manner as may be productive of the best results and to the best interests of all concerned. In order that you may better understand the nature of the investigations in connection with which the bureau would like cooperation and assist-

ance, I inclose a memorandum in regard to the same. I also suggest that this matter not only be brought to the attention of your Committee of the Council of National Defense, but to the attention of the members of the Iron and Steel Institute, which society I understand is to meet in Cincinnati on October 26. I shall be very glad to have a representative of the Bureau of Mines present at this meeting in order to explain in detail the bureau's plans for its work on manganese and to consider any suggestions that the members of the institute might care to make.

Awaiting your reply, I am,

Respectfully, yours,

(Signed) VAN. H. MANNING, *Director.*

Dr. MANNING. I say this at this time because it does occur once in a while that you must have some plenary powers to enforce these things. The Shipping Board was saying, "You can not get ships to bring it in, and therefore you will have to substitute something for it."

The CHAIRMAN. And unlike a private corporation, the Government wants to avoid any suggestion of favoritism.

Dr. MANNING. Surely.

The CHAIRMAN. And the reason that copper, lead, and zinc were left out was not showing that favoritism.

Dr. MANNING. None whatever.

The CHAIRMAN. It was because those metals are produced in sufficient quantities in this country to-day, and do not need encouragement.

Dr. MANNING. I do not think they do. But I want to repeat that my purpose in getting them in was because of Senator Pomerene's bill; which was drawn to take in iron and steel.

The CHAIRMAN. Under the contract features of the bill that you have referred to, if the Government entered into a contract, would it not have to offer a contract with all producers in a district up to the total amount required for that district?

Dr. MANNING. It is usual, under a Government contract, to pick out the manufacturers. Of course, it depends upon the exigency of the occasion. If you want any commodity, or any material of any kind, the Government officers ask for proposals. They usually get three proposals—I think three is the minimum—but they may go to many others and ask for bids. It does not necessarily follow that the Government always accepts the lowest bidder because the time factor and quality must be considered.

The CHAIRMAN. In order to avoid any question of favoritism, you would have to pursue such a course as that?

Dr. MANNING. Yes, sir; I want to point out that some of these minerals you might need in a very quick time and you could not search the country to find them. What we would do would be to create zones and take people within a certain zone and contract with them; but we do not want to overlook other people who are likely to produce.

The CHAIRMAN. Would this be very different in the net result from offering a guaranteed price in that zone or district?

Dr. MANNING. The price offered one contractor would have to be offered others operating under similar circumstances. I am opposed to the bounty system, because I see no reason why the Government should put a premium on producing its materials if it can accomplish it in another way, and the Government would lose nothing by

by the contract or the minimum-price features. But if the Government gives a bonus, of course, the money the Government expends is gone. It may get a benefit from it, it is true, but I want to see some legislation effected that is going to stabilize mining conditions when the war is over. The Government can not continue to give bonuses indefinitely.

Take the dye situation, for example. The day after the war was declared, Secretary Lane telephoned to the Director of the Geological Survey and myself to come to see him—I am speaking of the war between Germany and Great Britain—and he said, "We are going to face a shortage in dyestuffs. What can the Government do to help the dye industry?" I told him it was a matter of chemistry; that we could make the dyes in this country; it was simply a question of whether the people of the United States had the initiative and good common sense to go in and develop the industry.

So we called together, within 48 hours, 23 of the largest producers of chemicals and some of the textile people and put the question to them: "What can the Government do for you at this time in order to help develop the dye industry?" Without exception they said, "The things we want are, first, a protective tariff and an antidumping law."

Senator SHAFROTH. What do you mean by an antidumping law?

Dr. MANNING. That is, allowing the Germans to come into this country and engage in ruinous competition with the manufacturers of the dye industry. Secretary Lane called on me for a statement. I said that if the war lasted two years I believed that with the ingenuity, brains, and capital of our people, the United States would be absolutely free from Germany so far as the dye industry was concerned, and I would leave it to Congress as to whether they would provide a protective tariff.

Senator POINDEXTER. How does that compare in quality with the German dyestuffs?

Dr. MANNING. I think it can be demonstrated in our own use of dyes, in the materials that you and I wear. The first few months after we began to manufacture the dyes you could buy a pair of black stockings and wear them once and they would turn green; but now if you buy a pair of black stockings you will find that they will wear just as well as those made with the German dyes and are just as good.

Now, that is a concrete case. I do not want to go into a political discussion of the matter, but I made a statement before the Committee on Mines and Mining of the House that I thought the infant industries ought to be protected when the war is over.

Senator BAIRD. You can not get a man to put up his money unless he is going to be protected. I think money will be a little scarce after the war is over, too.

Dr. MANNING. Yes, sir.

The CHAIRMAN. Do you believe, Doctor, that this bill could be operated successfully with the $50,000,000?

Dr. MANNING. I would not like to say whether that would be too much or too little. It is just like any investment that a man makes. It might be too great and it might be too little.

The CHAIRMAN. In other words, you can not foresee at this time just what conditions you might contend with or be confronted with?

Dr. MANNING. I can not.

The CHAIRMAN. But you do believe that $10,000,000 would be entirely too small.

Dr. MANNING. Entirely inadequate.

The CHAIRMAN. Relative to the $500,000 for the expenses of administering the bill, what have you to say as to whether that is too large or is a reasonable amount?

Dr. MANNING. The original bill carried $1,000,000; but when the Committee on Mines and Mining inserted a provision that the bill should be administered through the Secretary of the Interior it was with my concurrence that the appropriation was cut in two, because the Interior Department has two large organizations now, both of which would be used.

The CHAIRMAN. You are no doubt aware of the fact that the Government has already taken over the wool of this country and has issued a pamphlet giving the regulations for the handling of the wool crop of 1918, are you not?

Dr. MANNING. I do not know under what appropriation they would take that over.

The CHAIRMAN. Well, that has been done and the regulations have been issued, and I understand that distributing points have already been created in different parts of the United States. Now, in the operation of this bill would the Government have distributing points from which they would handle this ore?

Dr. MANNING. They would if they bought it and stored it; but the Government might contract, say, with producers of manganese, delivery to be made direct from the mine to the consumer. It would not be necessary for the Government to buy and store it.

The CHAIRMAN. But that is allowed under this bill?

Dr. MANNING. In other words, the administrator would be the selling agent between the producer and the consumer, and he would be the agency that would go to the railroad agent or the Fuel Administration and say, "We must have coal." We have been doing that right along with respect to manganese and pyrite particularly, and I do not know of a case where the Fuel Administration has declined to see that the pyrite mines were supplied. We have also had to take up the question of pyrite shipments and steel rails and steel commodities that were needed.

The CHAIRMAN. The impression has gone out over the country that if this bill becomes a law the miners are going to receive directly financial aid and assistance. What have you to say as to that?

Dr. MANNING. They will not receive it directly unless it can be shown that the miner had a good prospect, and the Government will operate his mine. Some individual enterprise with a Government contract might receive an advance with which to build a railroad or a dirt road that would afford trucking facilities.

The CHAIRMAN. In what way will the producer be benefited by this bill?

Dr. MANNING. Well, the producers, of course, having something to sell, would have an agency that would represent him; but that agent must determine for itself whether he has a salable article. In other words, it is a business proposition. The administrator would have a difficult proposition on his hands, as far as that is concerned.

The CHAIRMAN. In other words, it is not intended that the Government will purchase a mine and mining properties?

Dr. MANNING. Absolutely not. The only provision in this bill about control of a mine is the idle or inefficiently handled mine, where a mine has not been operated to-day because the man says, "I can not get the price for my commodity, and unless I do I will not operate the mine."

The CHAIRMAN. In that case the Government would not buy the mine but take it over?

Dr. MANNING. You have a concrete case, as far as the railroads are concerned, and the railroad bill, I will say, is a precedent for this bill. It is provided that the Secretary of War can take over these railroads and operate them. How is he to operate them? Through the machinery that the railroads have.

The CHAIRMAN. Is it the Secretary of War or the Secretary of the Treasury?

Dr. MANNING. The Secretary of the Treasury is the agent that the Secretary of War selected, and he has the power to do it—I do not mean the physical taking over of the property, but it is done under governmental direction. The justice of that act will be proven.

Senator JONES of New Mexico. Now, Dr. Manning, the Food Administration is controlling the price and incidentally the production of a good many commodities simply by pooling the purchases for governmental use. Take beans, for instance. The only control of the price of beans thus far fixed has been for the Food Administration to offer certain prices for certain classes of beans and for certain quantities of beans, being the quantity that is necessary for the Army and the Navy and governmental requirements. Now, as far I have been advised, it has operated pretty well. It has had the effect of fixing that price as a price for beans all over the country, and the price offered for Government supplies was assumed or intended to be large enough to encourage the production of beans.

Now, why would not that sort of plan operate with regard to these minerals, just simply authorizing some agency of the Government to purchase the supplies of these minerals necessary for the direct use of the Government, and perhaps enlarge that so as to authorize it to buy a sufficient amount for the use of all concerns which are producing supplies for the Government?

Dr. MANNING. As to the Government buying beans, that is for their own use. They do not buy these other raw materials for their own use. The raw materials go into the manufacture of the finished product and the fabricated article.

Senator JONES of New Mexico. Yes. The Government, though, is interested in getting its material. For instance, if it buys steel it has got to see that the concern from which it purchases the steel has the iron and the manganese and the chrome, etc., and to that extent would simply engage in the purchase of these minerals for the purpose of supplying concerns which are manufacturing commodities for the use of the Government, and if those concerns are now getting an adequate supply of the basic material and did not need any assistance, let them go on as they are; but where the private concern is manufacturing for the Government one grade of material and it is confronted with a shortage of its basic material, permit the Govern-

ment in such case to enter the market as an agent to buy those basic materials and furnish them to the concerns producing the higher quality of material. Would not that do?

Dr. MANNING. That would undoubtedly work effectively in some cases.

Senator JONES of New Mexico. Now, my mind is running along that line. I have been thinking seriously of that sort of proposition and limiting this matter to that, and that in order to avoid this question of favoritism and to avoid the question of large profits, some provision might be made whereby those concerns to which the Government should advance money on the contracts for the purpose of putting up machinery or developing a mine, that we should create the governmental agency with all privileges and powers and benefits of a partner in the profit, provided the Government put up money to enable the private concern to develop and to engage in the business. It strikes me that we might have the Government made a partner in that business and allow the individual a certain percentage of profit, but any profit beyond that, say three-fourths of it, to go to the Government, because of the fact that the Government advances the money or gives assistance which is directly the cause of or participant in the production of the profit.

Dr. MANNING. Would not that cause some criticism, Senator, if the Government goes into a partnership with any contractor, would not the disappointed contractor come back and comment and say, "the Government is in partnership with certain concerns to produce these things and we are forced out of it"? The Government's only interest is the matter of administration, that this revolving fund, whatever amount is appropriated by Congress, be so administered that the Government ought not to lose money but could make a good profit out of it.

Senator JONES of New Mexico. I must say that the partnership feature struck me as one that would be looked upon in directly the opposite way.

Dr. MANNING. Indirectly it will be a partnership business, the Government handling it to the best advantage for them.

Senator JONES of New Mexico. The concerns which do not call on the Government for any assistance will not have to divide their profits, but if they did call upon the Government for assistance and large profits were made, then let the Government participate in the enlarged profits, and I should say to the extent of three-fourths of it, or perhaps more, beyond the reasonable profits, and instead of the person with whom the Government is dealing being considered a favorite, he would be considered a patriot to a large extent because it would be an assured fact that he could not make an exorbitant profit; that is, not one extremely so.

Dr. MANNING. Yes, sir. I think it would be very unfortunate if the opinion has gotten out—and as you may possibly know I am receiving letters asking what the mining people are going to get out of this bill if it becomes a law—it would be extremely unfortunate if the erroneous impression has gone out that the Government is going to finance this proposition in a way to encourage a flood of letters from those who want to get part of this appropriation to develop some prospect.

Senator JONES of New Mexico. Now, if the Government should create an agency clothed with sufficient authority to authorize it to buy all of these metals, or a sufficient quantity of them to supply its own needs and the needs of the concerns which are producing an output for Government use and give that agency authority to make advances when necessary to produce a given commodity, let it do it, and in such cases where advances are made, that beyond 10 per cent upon the capital invested, that the Government shall get three-fourths or four-fifths of the balance, we will say.

Dr. MANNING. Would not the excess-profits tax come in there?

Senator JONES of New Mexico. The trouble is that the ordinary excess-profits tax, I do not think, would cut quite so deep on the person who is relying wholly upon his individual resources as a concern which is calling for Government aid.

Dr. MANNING. I see.

Senator JONES of New Mexico. And let the excess-profits tax attach to the other one-fourth or the percentage which the mine operator would get beyond the ordinary return on his investment—his percentage of reasonable earnings.

The CHAIRMAN. Do you not think that one serious difficulty about that would be that it might be getting away from the word "encourage"? This act, as I understand it, is simply for the limited period during the war or such reasonable time thereafter as these matters can be closed up. I understand the bill provides that no contract shall be entered at all after peace is declared.

Dr. MANNING. No, sir.

The CHAIRMAN. Now, as I understand it, the main reasons for the bill are to really encourage and to go out to these miners and say, "Here we give you the opportunity to make more than you have been making, because the Government needs this material," just as in the case of the Shipping Board to-day—they say, "Cost is nothing; we want these ships; build them," and they are paying a good price to-day.

Dr. MANNING. I think the word "encourage" there ought to be interpreted by the absolute needs of the country, or we may encourage the industry and fail to get the production, but if we do get it, I think the question of profits is a factor that ought to be covered very carefully.

Senator JONES of New Mexico. We have had witness after witness come before this committee and other committees and say they are willing to work for the Government for nothing, and they are willing to do this thing and the other thing provided they are assured against loss. Now, some such scheme as that which I have just suggested would insure them against loss, and it would insure the Government against profiteering. If there is any profiteering in it, the Government would be the profiteer, and it would discourage people from calling upon the Government for assistance when they did not need it, and I think that is quite as important a thing to guard against here as any other, because if people can simply say to the Government, "We want your assistance and have got to have it," and they get all the benefit out of it; or, in other words, if they take no chance on loss with a good chance to win, why, I can imagine that you would be swamped with applications for governmental assistance.

Dr. MANNING. Yes, sir.

Senator POINDEXTER. Senator, in the case of beans that you have mentioned, is the price the Government paid for them more or less than the natural market price would have been?

Senator JONES of New Mexico. Under war conditions, and if you permit the different branches of the Government to bid against each other, I think the price of beans would have been higher than that fixed by the Government.

Senator POINDEXTER. With respect to wheat, a good many people talk about the price of wheat as though it was a sort of bonus to the farmer, when, as a matter of fact, it is a limitation on the price. The price would have been probably twice as much if the Government had not limited it.

The CHAIRMAN. It might have been three or four dollars.

Senator POINDEXTER. Yes.

Senator SHAFROTH. I do not think it would have risen that high, because I believe the great quantity that would be produced, stimulated by these higher prices, would have made such a large production that under the principle of supply and demand, automatically it would have come down, not, perhaps, as low as $2.20 a bushel, but somewhere between, say, $2.50 and $2.75.

Senator POINDEXTER. That is a matter of speculation. I am inclined to think it would have been at least $3 a bushel and, perhaps, $3.50.

Senator JONES of New Mexico. Dr. Manning, I would like to have you think over the idea I have suggested. Instead of adopting this bill as it is framed, I would like to have you and those who have been working with you consider that idea of pooling the purchasing of these minerals for these various industries which are furnishing supplies for the Government, and allocating the purchases, giving authority to buy at one price at one place and another price at another place, depending upon the conditions which affect the cost of production, and giving the right to commandeer, and then, coupled with that idea—I mean giving them authority also to advance money upon a contract, but where any money is advanced, making the Government a partner in the business to the extent of a division of the profits beyond a fixed amount.

Dr. MANNING. If that plan is adopted or seriously considered, would not the Government then be practically operating and controlling the operation of a particular mine to which Government aid was given? That is a feature of this bill that has been objected to by a good many people, and our purpose in putting that particular paragraph in the bill regarding Government operations was to take over the inefficient mines. It was not done with the thought that the owner of the mine would suffer by it, but would profit by it.

The CHAIRMAN. In the case suggested by Senator Jones, you would only be operating those mines where the owners requested the Government to come in with them.

Dr. MANNING. Yes, sir.

The CHAIRMAN. So the other mines that do not make that request would not be operated by the Government. In other words, it would be helping a man to mine.

Dr. MANNING. The Government ought to be protected in any investment it makes.

Senator JONES of New Mexico. Of course, where the Government invested money in the proposition, it would have the right, if it wanted to, to step in and actually operate, of course.

The CHAIRMAN. But as to owners who made no request of the Government, you would not take over and operate their property?

Dr. MANNING. No, sir.

The CHAIRMAN. Therefore it would be voluntary on the part of the man who owned the mine?

Dr. MANNING. Yes.

Senator SHAFROTH. Some one told of the manner in which England encouraged the production of materials it wanted over there by making contracts for the total output in the various industries; that they have no price-fixing system that we have, or minimum or maximum price. Is that true?

Dr. MANNING. I can not answer that, Senator.

The CHAIRMAN. They have recently passed an act going quite fully into the licensing feature. I have a copy of it here.

Dr. MANNING. Mr. Mudd says he understands the English Government does fix a price on many of its commodities.

Mr. MUDD. An as example, the price of tungsten is fixed by England, and it applies practically throughout the world at $12 a unit, which is only 50 per cent of the current price in this country to-day.

Senator SHAFROTH. Do they get it at that?

Mr. MUDD. There is no one else to buy it; the Government will not permit anyone else to buy it at other prices.

Senator SHAFROTH. No one can produce metal at that price, and it seems to me that instead of encouraging it, it would decrease it. I can see that it would be all right for the consumer to deal with the producer.

Th CHAIRMAN. In 1916 there was passed for the benefit of Canada the zinc bounties act, and it provided for a bounty on zinc produced in Canada where the price was less than a certain amount, and in 1916 the British Columbia mine development act was passed and is in operation, and in 1917 the British Columbia ore purchasing and treatment act was passed, and in 1918 an act to restrict temporarily persons who may engage in business connected with zinc nonferrous metals and metallic ores, and in this particular act the licensing feature is quite strongly set forth and fully provided for.

Dr. MANNING. Under this suggestion of yours, Senator Jones, regarding the Government sharing in the profits of any mine which they have advanced money to develop, could that be taken care of under the regulations? I am afraid that if we put anything in the bill covering that it would be an invitation to many thousand people who have a prospect, and it would cause a considerable amount of trouble to investigate their mines and see whether or not they have something that is worth while. In other words, we would be called upon to investigate every proposition that was put up to us.

Senator JONES of New Mexico. My notion is this: I feel that there is going to be great opposition in the Senate by turning over authority for general price fixing, and I think I realize to some extent, at least the reasons against price fixing, and I am inclined to the belief that we have got to work out some other plan.

Dr. MANNING. You are speaking of maximum or minimum?

Senator JONES of New Mexico. Both.

Dr. MANNING. The minimum price fixing was offered as a guaranty to the producer that he is going to get a price for his material after he mines it.

Senator JONES of New Mexico. And your maximum price too. There is going to be great opposition to any scheme of fixing either a minimum or maximum price on these metals and these ores, and if we can work out some other plan which does not involve that blanket idea I must say that I would like to see it done personally, and I am inclined to believe that it will be necessary to do it in order to get any legislation through the Senate. Now, I may be mistaken about that.

Senator SHAFROTH. Do I understand that you are satisfied with the bill as it comes from the House of Representatives without the maximum price-fixing feature, Dr. Manning?

Dr. MANNING. I want to be perfectly frank and say that I have never been very sympathetic with the idea of a maximum price being fixed for any commodity, but there ought to be some control given to prevent a runaway market. We have only to hark back to the coal situation to know that coal was selling last year at possibly three or four times as much as it is now. By common agreement the coal operators got together and said, "We will sell our coal after July 1 at a certain figure." Later on those prices were fixed, and it discouraged production immediately. I know, however, that the complaints directed against the Fuel Administration are decreasing.

Senator POINDEXTER. The weather is not as cold and that is the reason for that. [Laughter.]

Senator SHAFROTH. Dr. Manning, we are entirely in sympathy with the purposes and objects of this bill.

Dr. MANNING. I am glad to hear that.

Senator SHAFROTH. The question is as to the method. We all want to get an increased production, and we all want to avoid excess profits; those are the two things, but no matter how radically we may differ as to the means, that is the purpose and object of every member of this committee I am satisfied. Now, I can not help but believe that the Government incurs an enormous risk when it puts a blanket order out that will guarantee the price of any of these articles or any of these metals for a period of two years without limitation. I can not help but believe that as to some the increase in production will be such that the Government will have an enormous liability upon it, and yet it is possible that it might not. Notwithstanding that, I still favor a minimum price in preference to a maximum price. I do believe that both of these systems are very defective, and I do believe that the purchasing system has less of an unknown liability in it.

Dr. MANNING. This act contains a provision for purchasing and storing. It provides for contracts; it provides for a minimum price. I am not in favor of fixing a minimum price on pyrites to apply to the whole country, but if it is going to increase production in certain zones I would say, Yes, I am in favor of fixing a minimum price, but that ought to be determined upon. I am informed that the iron and steel companies said to Mr. Baruch the other day, "If you will tell us what your needs are we will get it out." But Mr. Baruch, and nobody else, can tell what the Government's needs are going to be.

Senator JONES of New Mexico. I can see a reason why the Government can fix a minimum price and guarantee a minimum price for wheat or corn or wool or any other product of that kind which is produced annually, the quantity of which is reasonably well known, and the cost of the production of which is known within reasonable limitation, but as to these metals where the supply depends upon discovery and where upon discovery there may be excess of supply, and the extent of production not be regulated by any definite period at all—a continuous thing not dependent upon seasons, even—I can see that there is a vast difference, and I do not believe that the reasons for the one constitutes a reason for the other. As Senator Shafroth has just said, and I think we are all agreed, we would like to encourage production and we would like to have a reasonable price; it is simply a question of how it can be done.

Dr. MANNING. That is the whole question, Senator. We have done the best we could in suggesting to Congress our conception of what is necessary, even so far as advising the phraseology of the House bill. Of course, that bill was changed by the committee but not very materially. The maximum price was omitted and the House of Representatives voted, in a very large majority, that the bill was sound in principle, and it was realized by the House, as we all do, that the thing was to encourage production and provide an adequate supply of those minerals of which the imports have been shut off.

Senator JONES of New Mexico. In the case of raw sugar the purchasers are comparatively few in number, and in that case they arranged for the refiners to put up the money to buy the raw product. They financed it in a private way, they offered a very large sum of money.

Dr. MANNING. I think there would be a very large amount of private capital that could be used to develop these mines if they could be shown that the Government really needed it, and that the production of the mine would be taken after it had been developed.

I will cite one case of pyrite production in Georgia, where one man did more to encourage production than the balance of the country put together. He said, "Here is something needed. Here is a good property. If you need money, I will see that you get it." He offered to build a road for one company to get to the mine. The owner said, "We do not want any financial help. All we need is a guaranty from somebody that they will take the output from our mine." He got the money from the banks and different people to finance the mining properties.

Senator JONES of New Mexico. This thought has been running through my mind a good deal, that very great good could be done by having some agency in the Government obtain reliable information as to the demands and supply of these metals and furnish information as to the uses to which they might be put, etc. I am satisfied that a vast deal of good can be done in that way, but whether that expanded to cover all these metals would be sufficient to meet the situation or not is doubtful in my mind.

Senator SHAFROTH. I have been, of course, studying the proposition since these hearings began particularly, and the thought which has impressed itself upon my mind—not from the very start but probably

when these hearings were about halfway through—was that there was less difficulty in the way of getting a production and at the same time limiting the liability of the Government by some kind of an adjustment like the one suggested by Senator Jones, namely, a buying system and a contract system by which the Government may know its liabilities absolutely, and can fix a price by contract with the party, and yet I do not know. I wish you gentlemen would figure out some scheme or some manner of handling it, or some manner of administration of that kind that would operate upon that principle, and I would like to have you, if you can, state what the objections are to having a revolving fund for the purpose of the Government purchasing whatever of these rare metals it may desire, first, for the Government's uses, if that would be sufficient to control the market as to price, and, next, if it is necessary, whether it should enter into contracts sufficiently large to supply the entire commercial demands of this country.

Dr. MANNING. I understand the Government has authority now through the Secretary of War and the Secretary of the Navy to purchase every fabricated material that is required for use by the Army and Navy, but there is no agency that I know of that has the authority for increasing production and buying raw materials which all manufacturers must have to make the fabricated articles. Therefore, the idea is to deal not only as far as the Government is concerned but to deal with industries which make the article that the public at large desires.

Senator SHAFROTH. Have you any idea as to the quantity that is demanded by the Government for use by the Army and Navy as contrasted with the quantity that is demanded for ordinary commercial transactions, dissociated with the Army and Navy needs?

Dr. MANNING. Take, for example, sulphuric acid. As you know, the demand of the Government and the country a few months ago was seven and a half billion tons a year. Now the estimates indicate that we need ten million tons. That excess is for governmental purposes wholly.

Senator SHAFROTH. Then, really it is one-fourth.

Dr. MANNING. Yes, sir.

Senator SHAFROTH. Of the total production?

Dr. MANNING. That is the increased amount. The requirements went up from about four to seven and a half million tons within the last few years, and this increase may also be traced to war needs. Conditions changed overnight. We have already an army of a million or more men, and we are thinking of an army of 5,000,000 men.

Senator SHAFROTH. There is an element of uncertainty in any proposition that can be made, and the question is which system gives more certainty of knowing what liability the Government would be put to.

Dr. MANNING. We are in sympathy with the idea that the Government should not incur liability out of proportion or unnecessarily, but at the same time I think the administrator ought to have authority to fix the minimum price, if necessary, using the contract system as far as it will go to meet the emergency.

Senator SHAFROTH. Do you know of any system by which the maximum price can be curbed better than the system of taxation upon excess war profits?

Dr. MANNING. I have given some thought to the question of excess profits. Frankly, I do not know much about the operation of the

law—I am not affected by it in any way only as affects my income tax, but I believe the excess-profits tax is doing indirectly what this bill proposes to do directly. When it comes to the excess-profits tax the Government gets the benefit of it, but the consumer or taxpayer does not. He is paying his price for a runaway market.

Senator SHAFROTH. That is true, but the Government is getting the benefit of a runaway market.

Dr. MANNING. Yes; but if the Government did not get the benefit of it, you would go back to the taxpayer and tax him to make up that deficiency. So it works both ways. If we can increase the cost of these commodities and then put a tax on them you would not feel as kindly about the cost of different commodities as if it was by direct taxation of the men who make excess profits.

Senator SHAFROTH. Do you think any of these industries are operating under any combination in restraint of trade, so that any legislation is necessary in order to curb them from making these unlawful combination?

Dr. MANNING. I do not know of any. Take the Standard Oil, for instance. They have one process called the Burton process, owned by the Standard Oil of Indiana. It controls absolutely the patent, and I have tried to convince the Standard Oil of Indiana that other operators should be permitted to use this patented process. The Japanese Embassy sent a representative of a very wealthy Japanese concern to see me the other day and asked if I would not use my influence with the Standard Oil to get them to let the Japanese Government have the use of this process by paying them whatever royalty they asked within reason. I asked him why he wanted it, and he said, "We are giving up our ships to the United States Government, and we must begin to take care of ourselves at home."

I put him in touch with the Standard Oil of Indiana, but whether he got any concession from them or not I do not know. He was asking for nothing except a reasonable royalty and a permit to use the process. That brings up the question presented to me recently as to what the copper and lead people will do with the flotation process. Some of the courts have decided that those concerns using it are liable for infringement of a patent and other courts have decided differently. The matter is in litigation. Some of the small users of the flotation process say that they can not pay the royalty demanded. In other words, the big copper men are paying about 4 cents a ton and the small ones about 24 cents a ton royalty. I took the matter up with a representative of the Mineral Separations Co., and he told me the company was justified in charging the difference.

This process is absolutely essential in some of the industries to-day. In my opinion there ought to be some legislation enacted at this time to compel regulation of some sort where a process is so essential to the industry. The Government, of course, if it was a manufacturer, could take over the process and use it, but no private concern can do it without facing a big lawsuit.

Senator SHAFROTH. Which, in your judgment, from your examination of this question up to the present time, is the better way to foresee, by minimum-price fixing and your regulation, or by increasing this amount to, say, $50,000,000, and providing that you, or whoever handles it—the administrator—shall make contracts for the supply of the ores that are necessary for the Government?

Dr. MANNING. I think the two are essential.

Senator SHAFROTH. Both of them?

Dr. MANNING. I think they are, leaving it to the good business judgment of the administrator to decide each particular case, whether or not the guaranteed minimum price is going to increase production, or the contract price. I can foresee that many operators of small mines could not enter into a contract with the Government. The contract might amount to a "piece of paper." You might look forward to the time when you are going to get the product of the mine but you will not have it. You can enforce the terms of a contract only when you know the man who enters into the contract can be penalized if he fails to comply with the terms of the contract.

Senator JONES of New Mexico. One of the purposes which I had in a good deal of this examination was to bring out a method, if possible, of dealing with each one of these metals. I must say that I do not believe that the Senate will grant any blanket authority to any branch of the Government to fix a minimum price wherever it wants to and at whatever amount it thinks it ought to fix.

Dr. MANNING. I think that could be avoided in this way, that you could instruct the administrator under this bill to utilize the contract system as far as it will go, and when that fails, he may fix the minimum price.

Senator JONES of New Mexico. If it is a guaranteed minimum price—and of course it is not a minimum price unless you guarantee it—and involves a direct obligation, an unknown obligation on the Government, I do not believe that the Senate will ever pass such a bill as that. I may be mistaken but I must say that as far as I am individually concerned at the present time, I am opposed to it. It may be that we can not work out anything else, but I am not in favor of it at the present time until we exhaust our ingenuity in trying to devise some other scheme. In other words, I think that is the most drastic thing which we could do.

Senator SHAFROTH. You have a memorandum with you of certain notes that you were proceeding with and we have interrupted you. Have you finished your statement that you intended to make originally before any questions were asked of you?

Dr. MANNING. I have finished, Senator, unless there are some other features on which some of the Senators desire information.

The CHAIRMAN. I understood that Dr. Manning had concluded and was prepared to answer any question that any member of the committee desired to ask.

Dr. MANNING. A majority of the witnesses who have appeared before the committee have voiced the same opinions that I have, and I do not want to take up the time of the committee to repeat what has already been said.

Senator POINDEXTER. You spoke of the action of the Secretary of the Interior and the Bureau of Mines following a conference of textile manufacturers and chemists of the country—chemical manufacturers, asking those business men what the Government could do to encourage the production of dyes, and they said a tariff and something else that I have forgotten——

Dr. MANNING. Antidumping.

Senator POINDEXTER. Antidumping arrangement, which is a general feature of a tariff bill. What did the Government do?

Dr. MANNING. The Government did not do anything. The dye manufacturers went to work and put up their own plants and have been operating.

Senator POINDEXTER. Very successfully?

Dr. MANNING. Very successfully, and I will say in all justice to those people that they did it with a feeling, as I know, that Congress, when it came to a question of protecting the dyestuff industry in this country, when the war is over, from Germany—which country has been the largest manufacturer—would have some protection, if protection was necessary. I believe it is only a matter of education. As it was brought out before, the people of this country believed they could get the best dyestuffs from Germany, because the Germans have been experts in their manufacture. I took the ground that we had just as good chemists in the United States as abroad; and if our people would get to work and the war lasted long enough, they would develop an industry here, which they have done.

Senator POINDEXTER. I was interested in the question of dyes. Did they have any special legislation on that at all?

Dr. MANNING. No; the dye industry was not essential to the Government.

Senator POINDEXTER. I thought it was, in a way, that we had to have those dyes, and the lack of them was caused by the war.

Dr. MANNING. The lack was due to the matter of not being able to get the dyes from Germany.

Senator POINDEXTER. That was caused by the war?

Dr. MANNING. Yes, sir.

Senator POINDEXTER. So it was a war situation?

Dr. MANNING. Yes, sir.

Senator POINDEXTER. I do not mean to indicate my position on this bill by these questions, but was simply trying to develop the different aspects of it. Does the authority contemplated by this bill that would be vested in the Government, through the Bureau of Mines or any other agency that might be utilized, extend only to these particular minerals and their production that are specifically named?

Dr. MANNING. Absolutely.

Senator POINDEXTER. And nothing else?

Dr. MANNING. It is not contemplated to take in anything else.

Senator POINDEXTER. My recollection of the testimony in the hearings is that there are only a very few of those minerals that are named there that have been shown to be so affected by the war as to need assistance.

Dr. MANNING. Yes, sir; that is true.

Senator POINDEXTER. Especially potash; is that named there?

Dr. MANNING. Yes, sir; that is in the bill.

Senator POINDEXTER. I was very much impressed with what you said about that and manganese, we will say.

Dr. MANNING. I have a list here of the minerals which were named in the original bill submitted by Dr. Foster to the House committee. They are as follows: Manganese, pyrites, chromite, graphite, platinum, tin, antimony, arsenic, magnesite, mercury, molybdenum, sulphur, and tungsten.

Of course, the platinum situation is well known to all of us. We can not look for a very large production of platinum in this country.

and I am convinced from my knowledge of the situation that the Government should take some active steps toward getting platinum from Russia, particularly more so than we have been doing. It is absolutely essential in the manufacture of war materials.

Senator POINDEXTER. I was talking with a young man last night who claims that he has a very rich deposit of platinum ore in connection with copper.

Dr. MANNING. Yes.

Senator POINDEXTER. That is, that there is a large amount of platinum in it; it is in Alaska.

Dr. MANNING. Under the provisions of this bill, if a prospect of that kind were called to the attention of the administrator he would send an expert, or the Bureau of Mines would do it at the present time, to look into the problem to see whether it was worth while developing it. That does not necessarily mean that the Government itself would develop the property, but with the Government backing it and seeing that it was worth while, after looking into it, it would encourage private capital to go into it.

Senator POINDEXTER. What is the necessity of including magnesite in this bill?

Dr. MANNING. That is one of the minerals that was put in because before the war nearly all magnesite was imported. When I looked over the items I saw that sea salt was mentioned and I asked what sea salt was used for. I was informed by the Shipping Board that there was a large importation coming in for the preservation of fish. I said, "Why can't we use our own resources from the Atlantic Ocean?" The Shipping Board said that sea salt was an importation and that we should encourage production of this grade of salt which has been imported in the past.

Senator POINDEXTER. As far as magnesite is concerned, some statement was made the other day that the price has gone down so that some of the mines were forced to close down.

Dr. MANNING. Under the provisions of the regulations to be prescribed by the administrator under this bill, magnesite could be used as a substitute for some other mineral that is being used, and it could be forced just the same as the Shipping Board forces the Bethlehem Steel Co. and other companies to substitute low-grade manganese for high grade.

Senator POINDEXTER. And as to potash, it would seem that the ruling price of potash would encourage the production to the limit. I do not say how much it could be. You would not want to pay more for potash than $400 a ton, would you?

Dr. MANNING. No, sir.

Senator POINDEXTER. I understand you can get that for it now.

Dr. MANNING. Yes, sir.

Senator POINDEXTER. It did strike me from what I heard here that something might be done by the Government to encourage the production of manganese.

The CHAIRMAN. I understand that there are quite a number of ores and metals mentioned in the bill whose production is sufficient at this time, but they put them in the bill in case anything should come up in the future, and so that it would not be necessary to come back for further legislation.

Senator POINDEXTER. I would like to suggest, then, in connection with it, that there should be considered whether or not unnecessary governmental interference with a prosperous industry in which there is ample supply for all need would not interfere with production; that the apprehension that people may have of some sort of Government regulation, instead of having a good effect would have a bad effect; in other words, whether or not it is not well to let well enough alone?

Dr. MANNING. The administrator of this bill would undoubtedly do that—that is, I assume he would.

Senator POINDEXTER. I am satisfied he would; I have no doubt of that at all, but the idea is—I do not know that it is entitled to much consideration—but it has been urged by a great many people whose opinions are worthy of consideration—practical business men—that the enactment of legislation on the subject creates apprehension and discouragement, and would interfere with rather than promote production.

Dr. MANNING. Yes, sir.

The CHAIRMAN. The mere mention of the matter in the bill would create an apprehension?

Senator POINDEXTER. Not only the mention of it, but investing express power in an agent of the Government to interfere with them and holding that authority over their heads all the time.

Dr. MANNING. You made an inquiry just now relative to the necessaries mentioned in this bill. As it passed the House, the bill included many minerals not in the original draft submitted by Dr. Foster to the House committee. The original bill included only antimony, arsenic, chromium, graphite, magnesite, manganese, mercury, molybdenum, platinum, pyrite, tungsten, tin, and sulphur and alloys and chemicals derived from them.

Now, by comparing this draft with the bill passed by the House you will see that new minerals have been added. Many of them were added at the suggestion of the Shipping Board, which was controlling the importations.

Senator POINDEXTER. Is it not true, as has been suggested here, that you are going to have a separate department for each one of these minerals mentioned in the bill?

Dr. MANNING. I submitted a chart to the committee this morning to show what the bureau had already accomplished under the appropriation made by Congress, showing also what work the Bureau of Mines is engaged upon, in which we outlined the war-minerals investigation. For instance, we have an expert in charge of manganese, one in charge of pyrites, one in charge of sulphuric acid, and other men in charge of chromite, graphite, and sulphur. These investigations are subdivided under some expert head, an expert in that particular line of business. I want to say to you that those who have been selected up to the present time by the bureau under the appropriation made by Congress recently have been men of the very highest type, the best class of engineers that we can get in the country. I have taken advantage of the psychology of the war situation. I get that class of men to work for the bureau as a patriotic proposition. They are experts in their line of work.

Senator POINDEXTER. There are no great number of ships occupied in transporting iridium into this country, are there?

Dr. MANNING. None whatever.

Senator POINDEXTER. How about zirconium?

Dr. MANNING. I do not think the imports are very large.

Senator POINDEXTER. What is zirconium? It is new to me.

Mr. MUDD. Zirconium is one of the rarer metals, and its use up to this time has been in the manufacture of refractories. I may add that it has been suggested, and from experiments that have been made it is indicated, that it may be substituted for one of the very important minerals which we now lack. It has been included for that reason. The experiments have not progressed far enough to name the mineral for which it may be substituted, but I will be glad to state that later.

Senator POINDEXTER. Can it be produced in this country?

Mr. MUDD. Yes, sir.

Senator POINDEXTER. Where is it obtained now?

Mr. MUDD. Some of it comes from Brazil. We have deposits containing zircon in Florida and North Carolina and other parts of this country.

Senator POINDEXTER. What is osmium?

Mr. MUDD. That is one of the platinum group of minerals. Crude platinum is always associated with a certain percentage of osmium. The Russian platinum as it is imported to this country contains some osmium before it is refined. The platinum which we get from the Pacific coast includes some ismium. It has no immediate use, although some application may be developed. It has been included because it is associated with platinum. Several of the minerals have been included in the bill because they may prove to be substitutes or are intimately associated with some other mineral named. Palladium is another member of the so-called platinum-group metals. Iridium, which is in the bill, is a platinum-group metal and an extremely important one, because platinum, as used in the arts, is always alloyed with it. It always contains a certain percentage of iridium, which hardens it. Iridium is always found in connection with crude platinum ores. Palladium is a substitute for platinum for some purposes. We have in the West an unusual occurrence in which gold, platinum, and palladium ores are found and a process has been devised whereby an alloy of gold and palladium has certain of the properties of platinum, especially those properties needed in chemical ware.

Senator POINDEXTER. Now, as to the production of these metals, the price of all of these platinum-group metals is very high, is it not, sufficiently high to encourage production?

Mr. MUDD. The price of platinum is about $105 an ounce, which represents a very large increase over the prewar price. No one familiar with platinum deposits in this country believes that we can produce enough platinum, regardless of price. It is a question of distribution and restriction of use to essential industries.

Senator POINDEXTER. Well, that power is already being exercised, is it not, by the different bureaus of the Government?

Mr. MUDD. The War Industries Board has undertaken recently to regulate the use of platinum, and it has commandeered stocks of platinum in the hands of the larger importers and larger refiners and some of the larger jewelry companies. Platinum can only be

disposed of or bought in appreciable quantities by permits secured through the War Industries Board.

Dr. MANNING. Seventy-five per cent only of the platinum has been commandeered by the Government.

Senator POINDEXTER. What is ball clay?

Mr. MUDD. That is a plastic white burning clay which we have been formerly importing from England. It may be necessary to curtail the imports, in which case we must look for domestic deposits to supply a material of equal quality. The clay industry has been built up largely on tradition. They do not like to change their formulas or their mixtures or their practice, and it may be necessary for the Government to attempt to find a clay of equal quality, and require them to use the domestic clay to the exclusion of the imported English clay.

Dr. MANNING. The Bureau of Mines developed a process for utilization of Georgia clays. It is used for certain purposes in tiling and in porcelain ware, and it is just as good as the imported clays that come to this country, and it costs practically the same.

Mr. MUDD. In the clay business it is a question of overcoming the inertia of the trade, which has been very backward in using our domestic resources. In fact, I think it is fair to say that the clay-making industry has progressed less in the last score of years than almost any other. The imports of ball clay and other clays come largely from England, and amount to 250,000 or 300,000 tons per year. It is a shipping problem, and it was included in the bill at the request of the Shipping Board.

Senator POINDEXTER. We import a great many clay products, do we not, for china, particularly the high grade?

Mr. MUDD. The high-grade china; yes, sir.

Senator POINDEXTER. Can not that be made in this country?

Mr. MUDD. I think it can, if given proper protection and assistance.

The CHAIRMAN. Dr. Manning, I think that is all the committee cares to ask you.

Mr. MACBETH. I would like to ask Dr. Manning a question or two. The information has gone into the West, and it has been published under headlines to this effect: The Hon. Franklin K. Lane, Secretary of the Interior, has indorsed a bill which has for its purpose the increase in production of certain rare metals—then naming this group. The article went on further to state that the miner and prospector would be assisted in his production; that there would be a price established which would enable them to make a profit, etc. Continuing, that article is very nearly a column in length. It is a similar article to many which we have had in the western newspapers, coming from Washington and under a Washington head. The hopes of the prospector and the owners of the small claims have been raised very high on account of what they have read. I would like to ask you, Dr. Manning, what you have to say with regard to that.

Dr. MANNING. I want to say most emphatically that Secretary Lane or nobody else is responsible for the distorted articles published in the West or anywhere else in the United States. It never occurred to Secretary Lane or to anybody in his department to make such a statement.

Mr. MACBETH. It was not in the Associated Press reports. We have traced it that far. We have not yet ascertained the source from which it came, but we will ultimately.

There is another matter, and that is this: The original bill introduced by you in the House, in the judgment of the House committee, provided that practically all of the necessaries in the United States should be taken over. The House committee amended that bill to include certain minerals and metals. Now there are a great many mining men in the United States who are not satisfied with this bill in its present form—men of standing—leading mining men of the United States, who consider that in its present form it will permit the taking over of the major metal industry. Would you be satisfied to have this bill so amended that it would not cover that?

Dr. MANNING. I do not see how any mining man who reads the opening statement of the bill could put such a construction upon it.

Mr. MACBETH. I refer to Mr. C. F. Kelley of the Anaconda.

Dr. MANNING. I venture to say that if Mr. Kelley made that statement he had not read the bill.

Mr. MACBETH. To my personal knowledge he put in three hours on it one evening.

Dr. MANNING. Mr. Chairman, I desire to read the opening section—section 1 of the bill—which provides as follows:

That by reason of the existence of a state of war, it is essential to the national security and defense, for the successful prosecution of the war, for the support and maintenance of the Army and Navy, to assure an adequate supply, equitable distribution, and to facilitate the production and movement of necessaries, which necessaries are defined in this act to include only the following-named mineral substances and ores, minerals, intermediate metallurgical products, metals, alloys, and chemical compounds thereof, etc.

The matter was thoroughly discussed before the committee, and there was no other interpretation, in my opinion, that could be put upon it, that it does not include anything not specifically mentioned in this bill.

Mr. MACBETH. You are aware that before the House committee, with the exception of Mr. H. L. Day, who did, by the way, treat on this question—none of the mining men of the United States, the producers, appeared; you are well aware that none of the producers appeared before the House committee when this bill was under consideration, are you not?

Dr. MANNING. They had the opportunity to appear. There was no question of a special invitation. Walter Douglass, one of the biggest operators in the country, appeared before the committee. He is president of the Phelps Dodge Corporation, and Mr. Day appeared before the committee, and he stated, as he reiterated here the other day, the objects to be attained in this bill had his approval. He does not approve of certain features of the bill. There are many people who do not approve of certain features of the bill. It is a matter of personal equation.

Mr. MACBETH. Permit me to call your attention to Mr. Day's words in reply to a question on page 180 of the House hearings:

Mr. DENISON. In other words, you do not want this bill to give the Government power to take over a lead mine or a silver mine or a copper mine simply because in the mining or smelting of those metals there may be a residuum of some of the others which happens to go to waste in such small quantities that they have not been able to save them at a profit?

Mr. DAY. That is my idea, exactly.

Mr. Day's expression is the expression, as you are aware, of the western mining producers, and I may say that of the mining men all over the United States. Now, what objection—as you disclaim any intention or any desire to take over the metal-producing interests of the United States—can you have to having this bill so amended that there would be no such possibility?

Dr. MANNING. I thought, Mr. Chairman, that we had so amended the bill, and I repeat that by careful reading of the bill it will be seen that it is limited to include the minerals mentioned in the bill. I do not see that there can be any discussion upon that subject. Anyone who reads the bill carefully will see that our purpose was to limit it to the items mentioned in the bill.

Mr. MACBETH. You were of that opinion when you originally introduced the Foster bill, were you not?

Dr. MANNING. When I submitted the original bill to Dr. Foster, he did not introduce the bill and the committee did not consider the bill as submitted to him in its original form, which included all metals, and I stated why those metals were included.

Mr. MACBETH. I am speaking of this bill before us. You were of the opinion that this bill only included certain minerals when it was considered by the House committee when you originally introduced it?

Dr. MANNING. Yes.

Mr. MACBETH. Such was determined not to be the case. Now, is there not a possibility of your again being mistaken?

Dr. MANNING. I assume the administrator of this bill will take into consideration the discussions in the House and before the two committees, which showed that the intent of the bill was to limit it to the ores and minerals mentioned in the bill, and the administrator would be very foolish to go outside of that and attempt to include other minerals.

Mr. MACBETH. I presume you are aware that when you said, "and chemical compounds thereof," certain metals, for instance those that are used in the manufacture of drugs and chemicals, like bismuth and bromines, etc., that you are practically taking over the chemical industry, and are you not aware also that you are stepping into the patent medicine industry at the same time?

Dr. MANNING. I am not.

Mr. MACBETH. I can not see why you are not.

Dr. MANNING. I desire to refer you to the testimony given by Dr. Nichols, the head of the biggest chemical concern in the world, in which he states that he has given very careful consideration to the bill, and he gave it his unqualified approval, and I want to say again that I have been guided very much in formulating this bill, and the phraseology of the bill, by the advice of men of that character.

Senator POINDEXTER. Is there any shortage in the production of patent medicines? [Laughter.]

Dr. MANNING. I do not know of any. I want to say here, and it is only fair to Mr. Macbeth and the people of the western country, that they have very naturally been critical as to Government activities in not doing more for the mining industry of the West. My purpose in trying to accomplish something for the mining industry through this bill is to help the mining industry of the country as a whole in

increasing production. My interest in it is not, frankly, as a war measure alone. I am just as much concerned in postwar conditions as I am in the present time, and it is my conception that it will accomplish the result if we can get the industries started, such as in the case of the dye industry, and we ought to do everything we possibly can to help them. The Geological Survey and the Bureau of Mines, with limited appropriations, have done as much as is in human power to help the industry. When I know that the agricultural interests have some $203,000,000 appropriated for their benefit, I think the mining industry is entitled to equal consideration.

Mr. MACBETH. You prefer to leave the question open, then?

Dr. MANNING. I am perfectly willing, as far as I am concerned, if the phraseology of this bill does not confine it to the metals mentioned to modify the bill, if there is any chance of taking over the copper, lead, zinc, iron, and steel industries, to specifically exclude them, but I want to say again that those producers in the next 12 months' time will wish that they had been under the protection of this bill.

The CHAIRMAN. It is now after 12 o'clock and the committee will adjourn to meet on call of the chairman.

(Accordingly, at 12 o'clock and 20 minutes p. m., the committee adjourned to meet on call of the chairman.)

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